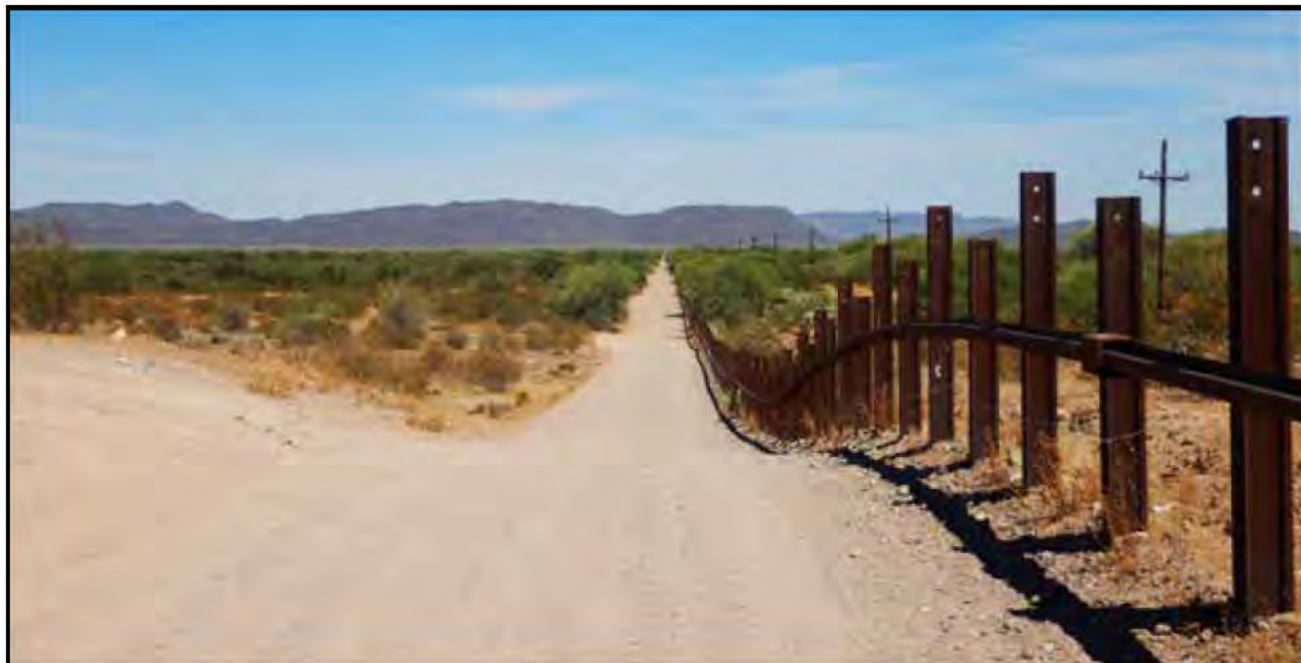




**ARCHAEOLOGICAL SURVEY OF 18.2 KILOMETERS (11.3 MILES) OF THE
U.S.-MEXICO INTERNATIONAL BORDER,
ORGAN PIPE CACTUS NATIONAL MONUMENT,
PIMA COUNTY, ARIZONA**



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Abstract

Between June 24 and 28, 2019, archaeologists with National Park Service's (NPS) Intermountain Region Archaeology Program (IMRAP) and Southern Arizona Support Office (SOAR) conducted a systematic pedestrian survey of 18.2 km (11.3 mi) of the southern boundary of Organ Pipe Cactus National Monument (ORPI), a portion of the 3,201 km (1,989 mi) long international border between the United States and Mexico. Over the course of this five-day-long field project the archaeologists surveyed a total of 45.3 ha (112 ac). Cumulatively, they identified, recorded, and mapped 35 isolated occurrences, 20 isolated features, and 5 archaeological sites.

This report 1) summarizes the survey findings and 2) offers National Register of Historic Places (NRHP) eligibility recommendations for the 5 newly identified archaeological sites.

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Figure. 1. ORPI Roosevelt Reservation survey team atop Monument Hill, June 27, 2019 (photo by A. Veech).

I. Introduction

Organ Pipe Cactus National Monument (ORPI) is a vast, 1,320 km² (517 mi²) national park unit and UNESCO biosphere reserve in southwestern Arizona, containing an abundance natural and cultural resources unique to the Sonoran Desert. ORPI's 48.3 km- (30 mi-) long southern boundary constitutes a portion of the 3,201 km- (1,989 mi-) long international border between the United States and Mexico (Figure 2).



Figure 2. Satellite image of Organ Pipe Cactus National Monument and the U.S.-Mexico International Border (courtesy of Google Earth).

Recently, the U.S. Army Corps of Engineers awarded two contracts valued at \$787 million for the replacement and extension of border fencing across much of the U.S. Customs and Border Patrol's (CBP) Tucson Sector, including the entirety of ORPI's 48.3 km- (30 mi-) long southern boundary (Figure 3). This construction project may commence as soon as July 2019, and it is scheduled for completion before the close of January 2020. The project entails the wholesale replacement of all existing vehicle barriers and pedestrian fencing along ORPI's southern boundary with a new, continuous 9.1 m- (30 ft-) tall, steel bollard fence, undergirded by a 2.44 to 3.04 m- (8 to 10 ft-) deep concrete and steel foundation. Likewise, the project includes the construction, expansion, and/or improvement of existing roads along the U.S. side of the border and the installation of spotlights and surveillance equipment.



Figure 3. Section of existing border fence within ORPI, view to the southwest (photo by A. Veech).

Precise design plans for this expanded border infrastructure have been left to the discretion of the contractors (i.e., Southwest Valley Constructors of Albuquerque, New Mexico and BFBC, LLC of Bozeman, Montana), and no details about the building project(s) have been furnished to the National Park Service (NPS). However, NPS managers have been informed that the project shall encompass the entirety of the 18.3 m- (60 ft-) wide Roosevelt Reservation along ORPI's southern boundary—an area cumulatively encompassing more than 88.3 ha (218.2 ac). So, for planning purposes, the NPS regards the entire 18.3 m- (60 ft-) wide Roosevelt Reservation as an area of great concern, whose cultural and natural resources are imperiled.

In light of this imminent border fence construction project, ORPI resource managers—in collaboration with Intermountain Region Archaeology Program (IMRAP) staff and Southern Arizona Support Office (SOAR) personnel—are now developing plans for the broad-scale recovery of threatened archaeological resources along the park's 48.3 km- (30 mi-) long southern boundary (IMRAP 2019). To fully develop this plan, park managers must first comprehensively inventory and evaluate all archeological resources across that boundary. While broad sections of ORPI's southern boundary have been previously surveyed for archaeological resources (most notably around Quitobaquito and the Dos Lomitas; see Section V of this report), other sections still remain archaeologically unexamined.

Between June 24 and 28, 2019, NPS archaeologists from IMRAP, SOAR, and ORPI systematically surveyed 18.2 km (11.3 mi) of ORPI's previously unexamined southern boundary (see Appendix B). This five-day pedestrian survey covered the entirety of the 18.3 m- (60 ft-) wide Roosevelt Reservation within the survey zone, an area of approximately 45.3 ha (112 ha). Numerous previously unrecorded archaeological resources were identified, plotted, and evaluated across the survey zone. These include 35 isolated occurrences, 20 isolated features, and 5 archaeological sites. This report summarizes those findings and offers recommendations for NRHP eligibility.

II. Environmental Setting

ORPI lies in the heart of the Sonoran Desert—one of the hottest and most arid regions in all of North America. The 48.3 km (30 mi) long southern boundary of the monument constitutes part of the international border between the United States and Mexico. To the east, the monument is bounded by the Tohono O’odham Reservation; to the west, it is bounded by the Cabeza Prieta National Wildlife Refuge (CPNWR). ORPI takes its name from the organ pipe cactus (*Stenocereus thurberi*), a species indigenous to the Sonoran Desert, whose range reaches its northern extent in southwestern Arizona.

Geology

ORPI is situated within the Basin and Range Geologic Province. Basin and Range is a geologic term describing a series of discrete yet parallel drop-faulted mountain ranges separated by wide desert plains (Hunt 1974; Palacio-Fest and Rankin 2008). ORPI’s eastern boundary is defined by the 24-km- (15-mi-) long Ajo Range, plus a portion of the lower-lying Santa Rosa Mountains; its northwestern boundary is defined by the Growler Mountains. Between these ranges lie the Bates Mountains, Puerto Blanco Mountains, Sonoyta Mountains, Diablo Mountains, Cipriano Hills, and Quitobaquito Hills, all of which are contained completely within the monument. Each of these various ranges trends roughly northwest-to-southeast. *Bajadas* (broad slopes of debris spread along the lower slopes of mountains by the coalescence of alluvial fans) join the mountain ranges with their adjacent valley lowlands. Elevations within the monument vary between 1,476 m (4,843 ft) at the peak of Mount Ajo and 299 m (980 ft) at Hocker Well (Brown et al. 1983:4). Bedrock in the region developed 1.5 and 2 billion years ago, the consequence of volcanic activity. Later episodes of basaltic volcanism occurred between 23 million and 10 million years ago, yielding massive uplifted granitic layers that now constitute the region’s mountain ranges (Bezy et al. 2000; Chamberlin 1972:2; Greene 1977:3; Tagg et al. 2002:5–7).

Hyperthermic arid soils characterize the western portion of the Papaguería. These are dominated by two soils: Coolidge-Denure-Rillito and Gunsight-Momoli-Chuckawalla. Gunsight-Momoli-Chuckawalla soils include deep and well-drained loams and gravelly loams with moderate permeability. Coolidge-Denure-Rillito soils consist of deep, medium- and moderately coarse-textured, nearly level to gently sloping loams on low alluvial surfaces and valley plain. Neither soil association is considered well suited to agricultural use today, but cultivation is possible in these soils with careful management and frequent irrigation (Palacio-Fest and Rankin 2008). Soils within ORPI are characterized as Antho fine sandy loam (found on 0-3% slopes), Ciprioni gravelly loam (0-5% slopes), Gachado very gravelly loam (2-8% slopes), Gilman very fine sandy loam (0-3% slopes), Gunsight very gravelly loam (on both 0-2% slopes and 2-15% slopes), Rillito gravelly sandy loam (0-3% slopes), and as soils of the Harqua-Gunsight complex (0-3% slopes) (Chamberlin 1972).

Hydrology

Surface water is a limited, often unavailable resource in the Sonoran Desert. Permanent, flowing streams are rare, and springs and seeps (places where subsurface water emerges from the ground through openings in rock or soil) usually are restricted to mountainous areas. Groundwater in

ORPI is solely a function of rainfall, mostly from the mountains. Multiple stream channels contribute to recharging the monument's few aquifers. Today, the average depth of those aquifers is approximately 23 m (75.5 ft) (Palacio-Fest et al. 2008:168). Documented springs at ORPI include: Bee Spring, Dripping Springs, Bull Pasture Spring, Aguajita Spring, Quitobaquito Springs, and Williams Spring. *Tinajas*, also known as rock tanks or plunge pools, are basins or depressions that are scoured into bedrock by erosional forces. Tinajas capture rainfall and runoff and hold that water for periods ranging from several days to months. Documented tinajas at ORPI include: Diaz Peak Tinaja, Jackson's Hole Tinaja, North Alamo Tinaja, Paisley Tinaja, and the Wild Horse Tank Tinajas. Seasonal washes or arroyos dissect the valleys of the Sonoran Desert, transporting heavy amounts of runoff water (as much as 7.62 cm [3 in] per hour) and alluvial soils during the summer monsoon season. Major washes within ORPI include: Alamo Wash, Aguajita Wash, Cherioni Wash, Growler Wash, Kuakatch Wash, and San Cristobal Wash (Brown et al. 1983; Rankin 1995:15-29).

Climate

The 37-year mean average rainfall recorded at the monument headquarters is 23.3 cm (9.17 in), and typically half of that precipitation falls during the monsoon season of July, August, and September (Brown et al. 1983:4). This summer monsoon precipitation often occurs abruptly in localized areas, resulting in flash floods (Ives 1936). July is the hottest month at the monument, averaging 32.7° C (90.9° F), with an average maximum daily temperature of 39.6°C (103.2° F). January is the coolest month, averaging 11.7° C (53.0° F), with an average minimum daily temperature of 5.4° C (41.7° F) (Johnson 1997:164). Drought conditions at ORPI are most prevalent during April, May, and June, just prior to the summer monsoon season (Brown et al. 1983:6).

Flora

ORPI is an environmental transition zone where plant and animal species reach their maximum extent. Species indigenous to three subdivisions of the Sonoran Desert—Arizona Uplands, Lower Colorado, and Central Gulf Coast (Shreve and Wiggins 1964)—merge within the monument boundaries. There are at least 643 plant species within ORPI, including subspecies and hybrids (Felger et al. 2007:209). Dominant plant species are creosote bush (*Larrea tridentata*), organ pipe cactus (*Stenocereus thurberi*), saguaro cactus (*Carnegiea gigantea*), and white bursage (*Ambrosia dumosa*). Also well represented are cholla (*Cylindropuntia* species), mesquite (*Prosopis* species), paloverde (*Parkinsonia* species), ocotillo (*Fouquieria splendens*), saltbush (*Atriplex* species), and scrub oak (*Quercus turbinella*) (Kearney and Peebles 1951:14; Shreve and Wiggins 1964:58; Tagg et al. 2002:9–10). The Sonoran Desert contains over 200 species of edible and medicinal plants as well as plant material for basketry, tools, shelter, and fuel. In general, the greatest abundance and variety of edible and usable plant resources is located on the bajadas (Rankin 1995:20).

Fauna

Hundreds of animal species (mammals, birds, reptiles, amphibians, arachnids, and insects) inhabit and traverse ORPI. Large mammals found within the monument include mule deer

(*Odocoileus hemionus*), white-tailed deer (*Odocoileus virginianus*), javelina (*Dicotyles tajacu*), coyote (*Canis latrans mearnsi*), bobcat (*Lynx rufus baileyi*), mountain lion (*Puma concolor Azteca*), and the endangered Sonoran pronghorn (*Antilocapra americana sonorensis*). Smaller mammals include the desert cottontail rabbit (*Sylvilagus auduboni arizonae*), black-tailed jackrabbit (*Lepus californicus eremicus*), common cactus mouse (*Peromyscus eremicus*), kangaroo rat (species *Dipodomys*), and pocket mouse (species *Chaetodipus*) (Tagg et al. 2002:10; Henry 2007:276–278). Common, year-round bird species include the Gambel's quail, roadrunner, white-wing dove, and raven. Numerous additional bird species migrate through the monument, including flycatchers, pelicans, ducks, geese, swans, hawks, and eagles (Griffin 2007:291–302). Indigenous reptile species include the desert iguana (*Dipsosaurus dorsalis*), gila monster (*Heloderma suspectum*), chuckwalla (*Sauromalus obesus*), Western diamond-back rattlesnake (species *Crotalus*), and desert tortoise (*Gopherus aggasizii*) (Rosen 2007:312–314).

III. Regional Culture History

Human groups have been present across ORPI's arid landscape for at least 10,500 years, and perhaps far longer (NPS 1997:35). Throughout most of that vast period, groups survived by practicing various strategies of nomadic hunting and gathering, roaming constantly or seasonally in search of water, edible plants, and game animals. Later in precontact times, certain groups adopted irrigation agriculture, settling near and farming the alluvial soils of seasonally-flowing washes. During historic times, some groups (most of European descent) grazed livestock across the region's sparse pasturage, while others mined ore deposits from the mountains. ORPI's culture history can be divided into five major periods: 1) Paleoindian, 2) Archaic, 3) Precontact Ceramic, 4) Protohistoric, and 5) Historic. This cultural history is summarized below, and the terms Before Common Era (BCE) and Common Era (CE) are applied. This present summary draws heavily from two previous synopses—namely, Rankin (1995) and Greene (1977).

Paleoindian Period (circa 15,000-8,500 BCE)

Paleoindian is a classificatory term applied to the small bands of migratory hunter-gatherers who entered and dispersed across the Americas during the final millennia of the Late Pleistocene Epoch (ca. 45,000-10,000 BCE), an era characterized by worldwide glacial advances and retreats. The archaeological assemblage most commonly associated with Paleoindian peoples is the Clovis tradition (10,500-8,800 BCE), a cultural complex whose hallmark artifact is the Clovis point—a lanceolate-shaped, fluted projectile point, occasionally found in association with the hunted and butchered remains of mammoth, mastodon, and other Pleistocene megafauna species (Anderson and Gillam 2000; Huckell and Haynes 2007).

Until recently, most archaeologists assumed Clovis peoples to have been the earliest Paleoindians in the Americas. This assumption now is discounted, due to the discovery and chronometric dating of “pre-Clovis” archaeological deposits at sites in Chile, Pennsylvania, Virginia, and elsewhere (Adovasio et al. 1990; Dillehay and Collins 1988; Feathers et al. 2006). These pre-Clovis assemblages have yet to be definitively characterized, though they have been termed as “blade-core technologies” and “Solutrean-like.” What is clear, however, is that they have been recovered from stratified deposits underlying Clovis artifacts, thus pushing back Paleoindian presence in the Americas by hundreds if not thousands of years.

Documented Clovis tradition discoveries in southwestern Arizona and northern Sonora, Mexico consist mainly of isolated projectile points. For instance, Ezell (1951-1952) discovered a Clovis point within the Growler Valley, just several miles northwest of ORPI inside CPNWR (Rankin 1995:45). The earliest firmly dated Clovis deposits in southwestern Arizona occur at Ventana Cave on the Tohono O'odham Reservation in Pima County and date to 9,350 BCE, a period when regional climate was cooler and moister (Haury 1950; Huckell and Haynes 2003).

No unequivocal evidence of pre-Clovis peoples in southwestern Arizona and northern Sonora has yet been found. However, alleged pre-Clovis artifacts and features have been identified on desert pavements situated within the Sierra Pinacate region, slightly southwest of ORPI. Terms applied to this alleged pre-Clovis tradition include Malpais and San Dieguito Phase I (Hayden 1966, 1967, 1976; Heilen 2004; Rogers 1939, 1958; Sanchez and Carpenter 2012, 2016).

Archaic Period (8,500 BCE-300 CE)

The term Archaic does not refer to a particular group(s) of precontact American Indians. Rather, it is an archaeological construct, a generalized term referring to a widely shared assemblage of material technologies and adaptive strategies employed by a variety of precontact American Indian groups. Archaic peoples inhabited a Holocene landscape, characterized by natural ecosystems and environmental conditions similar to those existing today. Regional climate patterns (temperature, precipitation, etc.) resembled those prevailing now, as did the various arrays of regionally-prevalent floral and faunal species (Emerson et al. 2009; Ritchie 1932a, 1932b; Willey and Phillips 1958:104-143).

Although geographically circumscribed and less nomadic than their Paleoindian predecessors, Archaic peoples were not fully sedentary. Rather, they periodically relocated to various places within their home territories, harvesting wild plants and animals as they became seasonally available. Group sizes waxed and waned during the course of this seasonal round-making, contingent on the abundance of wild foodstuffs in particular localities.

Archaic peoples, as a whole, were not horticulturalists; rather they were highly accomplished hunter-gatherers (Emerson et al. 2009; Ritchie 1932a, 1932b; Willey and Phillips 1958:104-143). Certain groups apparently were familiar with horticulture and domesticated foodstuffs, yet chose not to adopt a horticultural lifeway for various reasons. Some groups inhabited marginal, arid environments ill-suited for plant domestication. Others, because they inhabited regions naturally abundant with wild foodstuffs, saw no incentive to abandoning their hunter-gatherer lifeway.

Archaic peoples did not possess bow-and-arrow technology. Instead, they used spears and darts, sometimes propelled with atlatls (Blitz 1988; Justice 2002:44-47; Kelley 1959:277; Nassaney and Pyle 1999; Ritchie 1932a:408). The stones they procured to make such spear and dart points were usually quarried locally, rather than acquired from distant sources. Archaic peoples also did not generally make pottery, though they did excel at weaving, basketry, woodcarving, ground stone tool-making, and other craft pursuits. Certain groups were not familiar with pottery-making. Others apparently chose not to make pottery, due to pottery's fragility and hence its unsuitability for a semi-sedentary lifestyle (Crown and Wills 1995; Eerkens et al. 2002:222-225; Sassaman 2004:23-40; Spangle et al. 1959:6).

The Southwestern Archaic is the regional variant of the Archaic tradition that flourished at ORPI and across the Sonoran Desert. A remarkably extensive period in regional human history (8,500 BCE-300 CE), the Southwestern Archaic is divided into three archaeological phases (i.e., Early, Middle, and Late), each of which is identified by a distinctive set of traits and projectile point styles. All three phases are represented in the ORPI archaeological record. The Early Archaic spans the period from roughly 8,500 to 4,800 BCE. Early Archaic assemblages include percussion-flaked scrapers, foliate bifacial knives, choppers, flat slab metates, oval manos, and tapering-stemmed projectile points resembling Silver Lake and Lake Mohave points. The Middle Archaic extends from approximately 4,800 to 1,500 BCE. Characteristic projectile points include Bajada, Chiricahua, Gypsum Cave, Pinto, and an assortment of stemmed varieties with indented bases. Basin-shaped metates appeared during this phase. The Late Archaic extends from roughly 1,500 BCE to 300 CE. During this phase, regional lithic toolkits expanded in both size and

complexity. Higher-quality stone was quarried for chipped-stone tool manufacturing; side-notched and corner-notched points (e.g., San Pedro points) predominate. Ground-stone tool manufacturing became considerably more sophisticated and varied, evidenced by basin-shaped metates, shaped manos, mortars, pestles, and gyratory crushers. (Huckell 1984; Rankin 1995:49-50).

Precontact Ceramic Period (300-1450 CE)

The end of the Archaic period is marked by the introduction of pottery and the adoption of horticulture. The precontact ceramic period at ORPI is represented by three cultural traditions: Hohokam, Patayan, and Trincheras. All three reach their maximum geographic extent in the monument, although the archaeological record is dominated by the Hohokam.

Hohokam (300-1400 CE)

The Hohokam were the preeminent sedentary, pottery-producing horticulturalists of all southern Arizona, including ORPI. The Hohokam arose from indigenous Archaic populations in southeastern Arizona, ones who lived in pithouse villages near the Gila and Salt rivers and their larger tributaries, the Verde, San Pedro, Santa Cruz, and Agua Fria rivers (Crown 1991:144; Masse 1991:197). Through time, these groups intensified their cultivation of (and dependence on) Mesoamerican cultigens (especially corn, beans, and squash), adopting and adapting various techniques of floodwater farming (floodplain-inundation farming and *ak-chin* farming) (Masse 1991:208-210). The boundaries of Hohokam culture (variable through time) are measured archaeologically by specific elements of material culture: various diagnostic ceramics, marine shell items, ballcourts, and platform mounds (Wilcox 1980, 1991). The Hohokam chronology proposed by Dean (1991), which begins around 300 CE, is now generally accepted and is used in this report (Table 1).

Table 1. Hohokam chronology (from Dean 1991:91).

Period	Phase	Date Range
Classic	Civano	1300-1400 CE
	Soho	1150-1300 CE
Sedentary	Sacaton	975-1150 CE
Colonial	Santa Cruz	850-975 CE
	Gila Butte	775-850 CE
Pioneer	Snaketown	700-775 CE
	Sweetwater	600-700 CE
	Estrella	500-600 CE
	Vahki	300-500 CE

Pioneer Period (300-775 CE). Archaeological investigations, to date, suggest just a scant Hohokam presence in southwestern Arizona throughout the Pioneer period. No Pioneer-period sites or isolated sherds have yet been identified at ORPI (Rankin 1995:55-57). Early Pioneer period sites (300-500 CE) are characterized by locally-manufactured, utilitarian ceramics (plain, buff/brown wares and polished red wares). Decorated ceramic types (red-on-gray wares and red-

on-buff wares) appear later during the period (500-775 CE), alongside utilitarian wares (Crown 1991:145-147).

Colonial Period (775-975 CE). Colonial period sites occur with greater frequency than Pioneer period sites across southwestern Arizona, suggesting increased Hohokam migration to and settlement of the region through time. While resembling Pioneer period archaeological assemblages, Colonial period assemblages generally possess a greater quantity and diversity of materials. A broader spectrum of locally-manufactured items (ceramics, ground and chipped stone implements, etc.) is evident in Colonial assemblages, as is a wider range of finished goods and raw materials acquired through long-distance trade (e.g., marine shell ornaments, macaw feathers, turquoise). Ceramics diversify across the Hohokam culture area during the period, evidence of more localized pottery-making traditions. In southwestern Arizona, red-on-buff and red-on-brown wares proliferate, as do plain buff wares (e.g., Gila Plain), some with scored exteriors and, less frequently, with complexly executed painted motifs (geometric, zoomorphic, etc.). Small ca. 20-square-meter rectangular and ovular pithouses constitute the typical dwelling house types, frequently arranged in small clusters or courtyard groups of two to four structures. Habitation sites often possess multiple pit house clusters, as well as trash mounds (Crown 1991:150-153; Lindeman 2007; Rankin 1995:147-149).

Sedentary Period (975-1150 CE). In and around ORPI, the Hohokam Sedentary period manifests itself as the Topowa phase, typified by sites containing Salt-Gila area red-on-buff wares, plus lesser quantities of other ceramics (Tucson Basin red-on-brown, Trincheras buff, Lower Colorado Patayan buff). Habitation sites of the period are markedly larger than those of the preceding Colonial period, containing greater numbers and densities of pithouses, inhabited year-round. For instance, the Lost City site (AZ Y:16:1) along Growler Wash inside CPNWR (just west of ORPI) extends more than one linear mile. Marine shell debris abounds at Lost City and nearby Sedentary period habitation sites, suggesting the economic importance of exotic shell trade to local Hohokam populations. Several Sedentary period sites occur within ORPI (e.g., AZ Z:13:63), identified during the 1989-1991 WACC survey (Rankin 1995:58-59).

Classic Period (1150-1400 CE). The bulk of Hohokam sites identified at ORPI and adjacent CPNWR date to the Classic period. Regionally, the Classic period manifests itself as the Sells phase, typified by sites containing both Tanque Verde Red-on-brown wares and Sells Red wares, often in association with lesser quantities of Casa Grande Red-on-Buff, Trincheras Purple-on-red, and Salado polychrome ceramics. The most obvious Sells phase sites are large (> 100 acres), permanently inhabited pithouse villages (e.g., AZ Z:13:1), though other site types also have been identified around the monument (e.g., smaller villages, isolated farmsteads, limited-activity sites). Reservoirs were constructed in close proximity to certain of these villages. Marine shell debris is commonplace, suggesting that area populations remained intensively engaged in the shell trade and shell ornament manufacture, despite the decline of those activities elsewhere in the Classic-period Hohokam world. Obsidian debitage is common as well (Rankin 1995:59-61).

Patayan (700-post 1500 CE)

The Patayan of the lower Colorado River and lower Gila River constitute a separate (less well archaeologically understood) cultural tradition in western Arizona, contemporaneous with yet

distinct from Hohokam. Patayan chronology is divided into three archaeological phases: Patayan I (700-1050 CE), Patayan II (1050-1500 CE), and Patayan III (post 1500 CE). Patayan I diagnostic ceramics include vessels with rim notching, incised motifs, lug and loop handles, burnishing, and red slipping. Patayan II ceramics differ markedly; their traits include stucco finishing, fine-lined geometric motifs, and recurved rims. Patayan III ceramics (e.g., high-necked, small-mouthed olla) resemble those of ethnographically-recorded Quechan (Yuma) populations, to whom they are assumed to be related.

To date, few Patayan I ceramics have been identified in the ORPI vicinity, with the exception of those recovered from intact deposits at the Largo Seco site, slightly to the north of the monument. By contrast, multiple Patayan II ceramics and sites occur in the region, including those previously located within the western portion of the monument (Ezell 1954; Rankin 1995:62-63).

Trincheras (200-1450 CE)

The Trincheras culture constitutes another regional cultural tradition contemporaneous with yet separate from Hohokam. Although indigenous to northern Sonora, Mexico, Trincheras peoples evidently interacted (either directly or indirectly) with established Hohokam groups in southwestern Arizona. Trincheras ceramics (e.g., Trincheras Purple-on-red) occur on several Classic period Hohokam sites inside ORPI. The site type most indicative of late (post-1300 CE) Trincheras culture is the *cerro de trincheras*, or “terraced hill.” These sites consist of isolated volcanic hills crowned by walls and terraces constructed of dry-laid masonry (Fish et al. 2007; Hard and Roney 2007; McGuire 2012; McGuire and Villalpando 1993, 1998, 2015). Two cerros de trincheras have been identified in the immediate vicinity of ORPI, and others have been recorded within the adjacent Tohono O’odham Reservation (Rankin 1995:63-64).

Protohistoric Period (1450-1700 CE)

Protohistoric period sites across southern Arizona and northern Sonora typically consist of scatters of ceramics, chipped- and ground-stone artifacts, and clusters of fire-cracked rock. Artifact assemblages at these sites differ markedly from earlier Hohokam assemblages. Protohistoric ceramics are plain, thin-bodied, sand-tempered wares. Hand wiping marks are discernible on some vessel fragments. Chipped-stone artifacts generally are manufactured from high-quality raw materials, far superior to the lithic materials usually exploited by Hohokam flintknappers. Small, triangular-shaped projectile points with deep basal notching and edge serration are diagnostic protohistoric artifacts, as are chert thumbnail scrapers. To date, several protohistoric sites have been identified within ORPI, though none have been intensively studied, nor have they been positively affiliated within any ethnographically-documented population (Rankin 1995:64).

Historic Period (post 1700 CE)

Historically, the ORPI area was used and periodically occupied by groups of Tohono O’odham (a.k.a., Papago) and Hia C’ed O’odham (a.k.a., Sand Papago or Areneños). Tohono O’odham groups routinely gathered cactus fruit and hunted small game animals in the vicinity. Less

frequently, they traversed the monument on long pilgrimages to and from the Gulf of California, where they gathered sea salt. *I'toi Mo'o* (Montezuma's Head), in the Ajo Range, is a Tohono O'odham sacred site, as are other places throughout the monument (NPS 1997:33). Tohono O'odham ethnographic informants mention the existence of a *ranchería* (individual farmstead) in the monument's Alamo Canyon area. Likewise, they indicate the presence of old *temporales* (summer agricultural settlements) near Armenta Well. Jesuit and Franciscan accounts denote a small native settlement at Quitobaquito Springs at least by the mid-1700s. Later records from the mid and late 1800s identify that settlement as the Hia C'ed O'odham rancheria called 'A'al Waippa, where irrigation agriculture was practiced up into the early 1900s. Components of the 'A'al Waippa community fall within today's monument boundaries (e.g., Quitobaquito earthen dam, irrigation canals, cemetery) and are inventoried on ORPI's List of Classified Structures, while other components (e.g., the agricultural fields) lie on the Mexican side of the border (NPS 2002).

Traditional Tohono O'odham houses were circular, dirt-roofed brush structures constructed of mesquite saplings, grasses, ocotillo stalks, and saguaro ribs. Mesquite-pole ramadas typically were erected in close proximity to these ephemeral houses, functioning as shaded work areas. Practitioners of monsoon floodwater farming, the Tohono O'odham situated their temporales near the lower alluvial fans of seasonally-flowing arroyos, from which they diverted water for crop fields, called *ak-chin* in O'odham, meaning "mouth of the wash" (Masse 1991:209; NPS 2010:24). These temporales shifted location through time, as did *ak-chin*. The Tohono O'odham excelled as basket weavers, working principally with yucca and cat claw. They also made pottery, which is distinctive from earlier Hohokam ceramics.

Traditional Hia C'ed O'odham housing was extremely ephemeral, reflective of those groups' predominately nomadic, hunting-and-gathering lifeway. Rounded shelters were built of grasses and brush, propped up within low boulder rings one or two courses high. Archaeologically, these structures occur as boulder-outlined cleared areas. The Hia C'ed O'odham definitely wove basketry; whether or not they made pottery is unclear. They routinely collected Gulf of California seashells for trade with neighboring horticulturalists, exchanging those shells for crops (Rankin 1995:64-66).

The Ajo Range along the monument's eastern boundary have long been a hub of intensive mining activity. Miners (first, Mexicans and later, Americans) dug and smelted copper ore from the Ajos throughout most of the 1800s and early 1900s. Early Mexican miners built the El Monte blast furnace, a site for processing Ajo copper ore, somewhere in the vicinity, perhaps in Alamo Canyon. Likewise, they built roads for packing copper ore southward to the Sonoran towns of Altar and Caborca. Later American firms (e.g., the Arizona Mining and Trading Company, the New Cornelia Mining Company) vastly expanded the scope and intensity of regional copper mining, freighting tons of ore to Yuma, Arizona on the Southern Pacific Railroad and to Gila Bend, Arizona on the Tucson, Cornelia, and Gila Bend Railroad (Greene 1977:50-53). Moderate- to extensive-scale mining activities (for copper, lead, gold, and silver) occurred elsewhere within the monument during the nineteenth and early twentieth centuries—in the Quitobaquito Hills, the Puerto Blanco Mountains, the Sonoyta Mountains, and the Bates and Growler Mountains. Of these areas, the Bates and Growler Mountains were mined most intensively; over 100 claims were filed, prospected, and dug there. Numerous mines (most dating

between the 1870s and 1920s) are scattered throughout ORPI, including Baker Mine, Lost Cabin Mine, Milton Mine, Copper Mountain Mine, and the 122 m (400 ft) deep Victoria Mine (Greene 1977:52-56; NPS 1997:33, 2002; Rheume 2008:4-5). A vast array of mining-related sites and features also occur—glory holes, ore-cart runouts, leaching vats, prospect pits, mining camps, mining supply stores, and dynamite storage bunkers (NPS 2010:24). Some of these mines, sites, and features are listed on the NRHP and on the monument's List of Classified Structures. The remains of a probable pre-twentieth-century *arrastra*—a primitive, burro-powered grinding mill for crushing ore—is located at Bates Well (NPS 2010:24).

European livestock species—cattle, sheep, goats, mules, and horses—first arrived in northern Sonora and southwestern Arizona as early as the 1540s, during the Coronado *entrada* (Fontana 1994:25-31; Lavender 1992:62). By the early 1700s cattle had become regionally commonplace, as a result of Jesuit Eusebio Kino's successful stock-raising efforts in the Sonoran village of Sonoyta, and following American annexation in 1848 cattle ranching became an established part of the southern Arizona economy (Greene 1977:56-57; Kessell 2002:125-135).

Throughout the second half of the 1800s various Tohono O'odham, Mexican, and American families grazed small numbers of cattle at various locations around ORPI, such as Quitobaquito Springs. Large-scale cattle ranching in the monument, however, did not commence until the 1910s, with the establishment of the Blankenship (a.k.a., Dos Lomitas) Ranch in the Sonoyta Valley, the Miller Ranch southwest of Walls Well, and the Daniels Ranch around Bates Well. The largest and most successful stock-raising operation at ORPI was that owned by Robert Louis Gray, Sr., who arrived in the area in 1920, buying out Donald Blankenship. Over the next six decades Gray and his sons expanded their herds and landholdings across the entire monument, continuing their ranching activities until the close of 1976 (Greene 1977:56-60). Components of several ranches (e.g., ranch houses, line camps, tack barns, bunkhouses, corrals, windmills) are inventoried on ORPI's List of Classified Structures and the NRHP, including those associated with Bates Well, Gachado Well Line Camp, and Dos Lomitas Ranch (NPS 1997:23-33, 2010:24; Rheume 2008:5).

On April 13, 1937, Franklin D. Roosevelt signed Presidential Proclamation 2232 and officially established Organ Pipe Cactus National Monument, a 13,389 ha² (517 mi²) Sonoran Desert preserve to be managed by the NPS. While placing ORPI under federal ownership, the proclamation also acknowledged a variety of stipulations pertaining to established land use, including mining, ranching, and other long-practiced extractive activities. For example, local Tohono O'odham continued to harvest cactus fruit and graze cattle within the monument boundaries as they had for generations. Hia C'ed O'odham rancher Jose Juan Orosco continued grazing cattle around his 6 ha (15 ac) homestead at Quitobaquito until his death in 1945 (Greene 1977:65).

Various ranches existed in the area prior to establishment of the monument, most notably that of the Gray family, and this practice continued until 1976 (Martinez 1976), and mining interests operated sporadically within the monument through at least 1967 (Young 1967). Hunting and woodcutting were a perpetual problem for NPS managers, and the park's "first project" from November 1939 and March 1940 was the erection of 19 km (2 mi) of fencing and two cattle

guards along the monument's northern boundary. Additional fencing followed as funding allowed but was often damaged by heavy flooding and occasional cutting.

These practices would continue for decades as the NPS made the transition from prior ownership or use to good stewards of the monument resources, all the while trying to remain a good neighbor with surrounding communities.

IV. Previous Archaeological Research

To date, the NPS has not conducted a comprehensive archaeological survey of the 18.3 m- (60 ft-) wide Roosevelt Reservation comprising ORPI's 48.3 km- (30 mi-) long southern boundary. However, certain segments of the Reservation within the park have been surveyed as part of various ORPI survey projects conducted between 1951 and 2017. These include:

- Ezell 1951
- Teague 1977
- Rankin 1995
- Rankin, Antone, and Waters 1993
- Corey 2002
- Bradford et al. 2013
- Slaton et al. 2014
- Veech 2016
- Veech 2018a
- Veech 2018b
- Renaud 2018
- Ferguson et al. 2019

During 1951 Paul Ezell spent three months surveying portions of ORPI, as well as other nearby areas of southwestern Arizona and northern Sonora, Mexico. He recorded more than 100 archaeological sites, including habitation sites, rock shelters, camp sites, lithic quarries, and trails—ranging temporally from the early Archaic (10,500-6,800 B.P.) through the historic (post-A.D. 1700) periods (Ezell 1951).

In 1977 Lynn Teague of the Arizona State Museum surveyed 202 ha (500 ac) of the Quitobaquito Basin from the crest of the Quitobaquito Hills east to Aguajita Wash. Teague identified 9 precontact and historic-period loci across the survey area, which she recorded at 7 distinct archaeological sites (Teague 1977).

Between 1989 and 1991 Adrienne Rankin of the Western Archeological and Conservation Center, National Park Service (WAAC) directed the most thorough and extensive series of ORPI archaeological surveys, to date. Those surveys were undertaken for planning purposes (in compliance with section 110 of NHPA), with the aim of locating, identifying, and evaluating as many cultural resources across the monument as possible. A total of 3,106 ha (7,675 ac) was surveyed, and some 178 archaeological sites were recorded. Regarding water as the chief limiting factor in archaeological site location, Rankin and WACC focused the 1989-1991 ORPI surveys on areas nearby the monument's largest, seasonally-intermittent washes. The surveys examined areas adjacent to and or within 1 km (0.6 mi) of Alamo, Aguajita, Cherioni, Growler, Kuakatch, and San Cristobal washes. Additionally, they encompassed areas adjacent to various seasonal tinajas in the Bates Mountains (Rankin 1995:xxiv, 22). Rankin and fellow WACC archaeologists returned to ORPI in 1993, more thoroughly recording segments of pedestrian trails and wagon roads near Quitobaquito (Rankin, Antone, and Waters 1993a, 1993b).

Between June 2011 and November 2012, 14 distinct yet related archaeological surveys were conducted within the monument, in advance of proposed Undesignated Vehicle Route (UVR) restoration. Those surveys were initiated and principally conducted by ORPI archaeological technician James Collis, with subsequent follow-up fieldwork performed by ORPI permanent and term staffs (2012-present for UVRs and restoration efforts) and staff archaeologists of the Intermountain Region Archaeology Program (IMRAP). Cumulatively, those surveys covered 61 km (38 mi) of UVRs within the monument, an area totaling 149.1 ha (368.2 ac). As a result of these surveys, 6 (b) (3) previously unrecorded archaeological sites were documented, and 2 previously-recorded sites were revisited and reassessed. All 8 of those sites are recommended eligible for listing on the National Register of Historic Places (NRHP). Additionally, 9 isolated features were located, as were no fewer than 249 isolated occurrences (Bradford et. al. 2013).

Between November 27 and December 3, 2012, former ORPI cultural resources manager Connie Gibson surveyed 0.72 ha (1.77 ac) of the Dos Lomitas area. Gibson's survey focused on the (b) (3) (B), which purportedly contained dense concentrations of precontact Native American petroglyphs and (b) (3) artifacts. Gibson identified and plotted 5 petroglyphs and more than 200 flaked lithic artifacts across her survey area, which she cumulatively recorded as archaeological site SON C:1:80 (ASM) (Slaton et al. 2014).

Between December 2014 and January 2016 archaeologists with the University of Arizona's School of Anthropology under the direction of T.J. Ferguson and Maren Hopkins conducted a series of linear surveys across ORPI aiming to identify and record precontact, protohistoric, and historic-period O'odham trail networks, particularly north-south-trending trail networks used during traditional salt pilgrimages to and from the Gulf of California. A total of 310 suspected trail and road traces were identified using air photo and image interpretation, with an aggregate length of 63 km (39 mi). Trail segments within 6 different travel corridors were field verified (Sites ORPI00289, ORPI00291, ORPI00293, ORPI00295, ORPI00297, and ORPI00299), including pedestrian trails and wagon roads. Most of the trail traces are located in 3 travel corridors that generally trend in a north-south direction: ORPI00295 (Old Ajo-to-Sonoita Corridor), ORPI00293 (Gunsight Corridor), and ORPI00291 (Bates Well to Quitobaquito Corridor). All 3 of those corridors contain wagon roads and pedestrian trails (Ferguson et al. 2019).

Between June 13 and September 15, 2016, IMRAP archaeologist Andrew Veech conducted archaeological surveys along 60 UVRs and across 34 UVR blocks in advance of UVR restoration efforts. Fifty-five of the surveyed UVRs and all 34 surveyed UVR blocks lie in Organ Pipe Cactus National Monument, while 5 of the surveyed UVRs are situated in Cabeza Prieta National Wildlife Refuge. Cultural resources were identified along or within 48 of the 94 surveyed UVRs and UVR blocks. The identified cultural resources include 212 isolated occurrences, 9 isolated features, and 2 precontact Native American archaeological sites. In total, 80.03 ha (197.77 ac) were surveyed. One additional isolated feature, an historic-period hearth outside of the designated survey areas, likewise was identified and recorded (Veech 2016).

Between January 24 and December 19, 2017, ORPI archaeological technicians Brendan Stewart and Jared Renaud conducted linear and block pedestrian surveys along 24 UVRs and across

UVR blocks in advance of UVR restoration efforts. These surveys cumulatively covered an area of 54.8 ha (135.3 ac) dispersed across the park, including portions of the Sonoyta Valley and Sonoyta Hills near the International Border. Stewart and Renaud identified and recorded a total of 7 archaeological sites during their 2017 surveys, 4 of which lie in close proximity to the International Border. Those 4 sites are ORPI 313, ORPI 330, ORPI 420, and ORPI 421 (Renaud 2018).

Between August 28 and September 7, 2017, IMRAP archaeologists Andrew Veech and George Prothro surveyed and reassessed 49.9 ha (123.4 ac) of the Dos Lomitas area of ORPI, at the request of ORPI managers. Over the course of this project the archaeologists identified, recorded, and mapped 6 precontact Native American archaeological sites and 1 isolated feature (Veech 2018a). Cumulatively, this 2017 project constitutes a comprehensive reevaluation of the Dos Lomitas archaeological landscape, one that more credibly correlates archaeological site boundaries with actual physiographic features. Likewise, the project furnishes ORPI managers with fine-grained information about artifact distribution across the Dos Lomitas area and up-to-date assessments of archaeological site conditions and threats, enhancing and building upon earlier work in the area by Ezell (1951) and Rankin (1995:551-574).

All of these surveys were pedestrian surveys; none entailed any subsurface testing for potentially buried archaeological deposits. It is probable that significant, presently-unrecorded surface-level and buried archaeological deposits persist across the project APE, and we must assume that all such unrecorded deposits will be destroyed over the course of ensuing border wall construction.

V. Previously Recorded Archaeological Resources (n=17) within the Roosevelt Reservation of ORPI

While none of the aforementioned ORPI archaeological studies comprehensively surveyed the 48.3 km- (30 mi-) long Roosevelt Reservation corridor bounding the southern edge of the park, each surveyed some portion of that corridor and, in doing so, identified and recorded 17 archaeological sites which likely will be wholly or partially destroyed by forthcoming border fence construction. Seven (7) of those 17 sites cluster around the (b) (3) (B) a prominent pair of (b) (3) (B). Seven (7) others cluster around (b) (3) (B) and (b) (3) (B), situated approximately (b) (3) (B). Two (2) of the three (3) remaining sites-- SON B:33 and SON B:34-- lie (b) (3) (B) of Quitobaquito, while the third site-- SON C:1:79-- lies within the (b) (3) (B) (3). The following tables (Tables 2-4) list those 17 sites, and more thorough descriptions of each resource are provided thereafter.

Table 2. Previously recorded ORPI archaeological sites (n=7) in the vicinity of Quitobaquito and Aguajita Wash.

ASM Number	CRIS ASMIS Number	Site Type	Associated Projects
SON B:4:2	ORPI 152/ ORPI 314	Possible camp site	Supernaugh and Leding, 1952
SON B:4:13	ORPI 196	Multi-component site with possible structure	Teague 1977
SON B:4:14	ORPI 218	Mikul Levy's store from the 1880s and 1890s	Teague 1977
SON B:4:9	ORPI 193	Multi-component artifact scatter	Teague 1977
SON B:4:5	ORPI 317	Possible shrine(s)	Supernaugh and Leding, 1952
SON B:4:8	ORPI 321	Possible vegetal processing site with hearths, manos, and metates	Supernaugh 1952; Renaud 2018b
	ORPI 298	precontact, protohistoric, and historic-period trail and wagon road segments	Ferguson et al. 2019

Table 3. Previously recorded ORPI archaeological sites (n=7) and local resource types (n=1) in the vicinity of the Dos Lomitas.

ASM Number	CRIS ASMIS Number	Site Type	Associated Projects
SON C:1:43	ORPI 100	precontact sherd and lithic scatter	Rankin 1995; Veech 2018a
SON C:1:36	ORPI 184	precontact sherd and lithic scatter	Rankin 1995; Bradford et al. 2013; Veech 2018a
	ORPI 330	precontact sherd and lithic scatter	Renaud 2018a
	ORPI 420	historic-period road trace	Renaud 2018a
	ORPI 421	precontact sherd and lithic scatter	Renaud 2018a
	ORPI 425	precontact lithic procurement and reduction site	Veech 2018b
	ORPI 299	precontact and protohistoric trail segments	Ferguson et al. 2019
SON C:1:37	ORPI 185	Small lithic and sherd scatter redesignated a LRT in 2017.	Rankin 1995; Veech 2018a

Table 4. Previously recorded archaeological sites elsewhere along the southern boundary of ORPI (n=3).

ASM Number	CRIS ASMIS Number	Site Type	Associated Projects
SON B:4:33	ORPI 204	remnants of dismantled 1947 ORPI boundary fence	Bradford et al. 2013
SON B:1:34	ORPI 275	precontact sherd and lithic scatter	Bradford et al. 2013
SON C:1:79	ORPI 274	precontact sherd and lithic scatter	Bradford et al. 2013

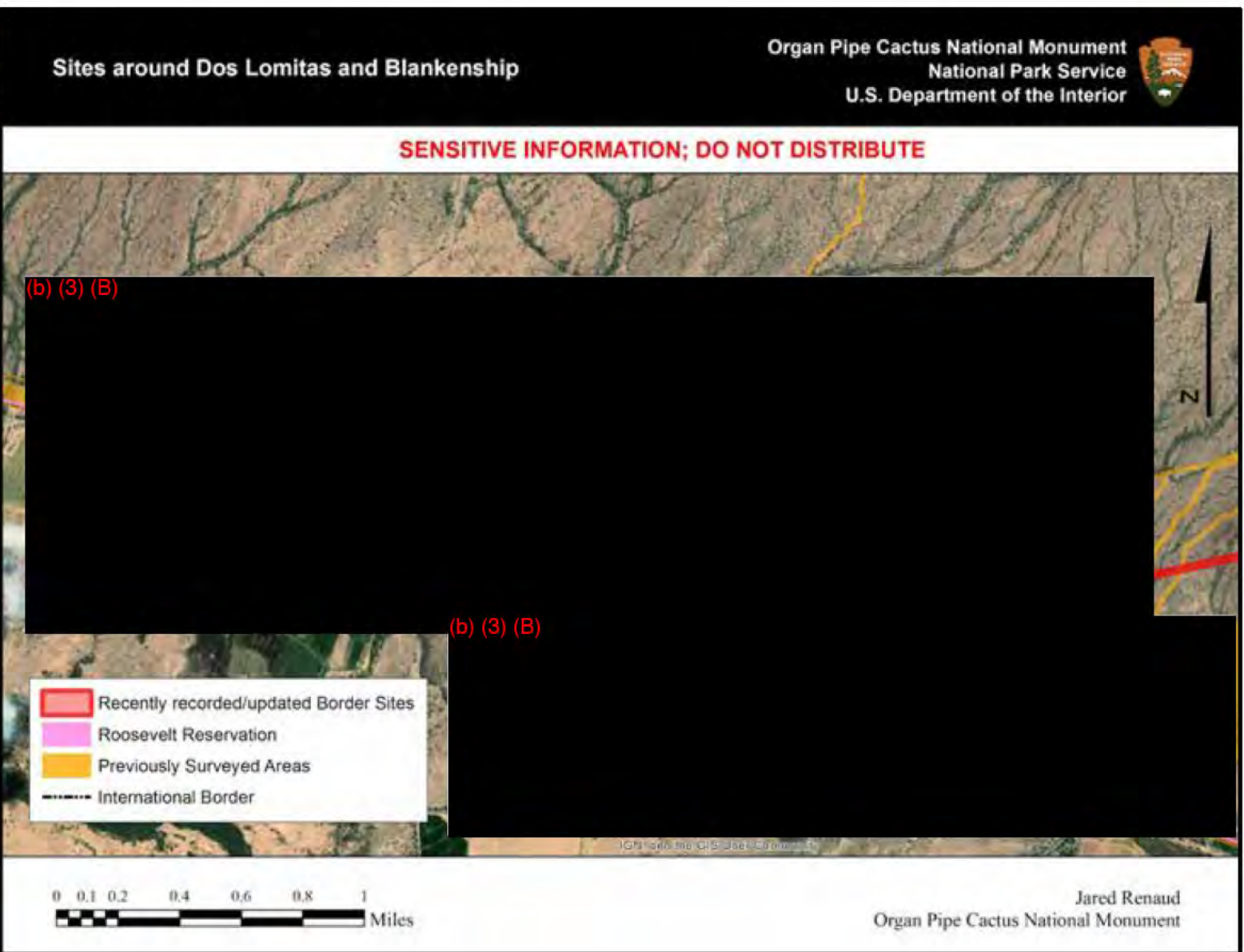
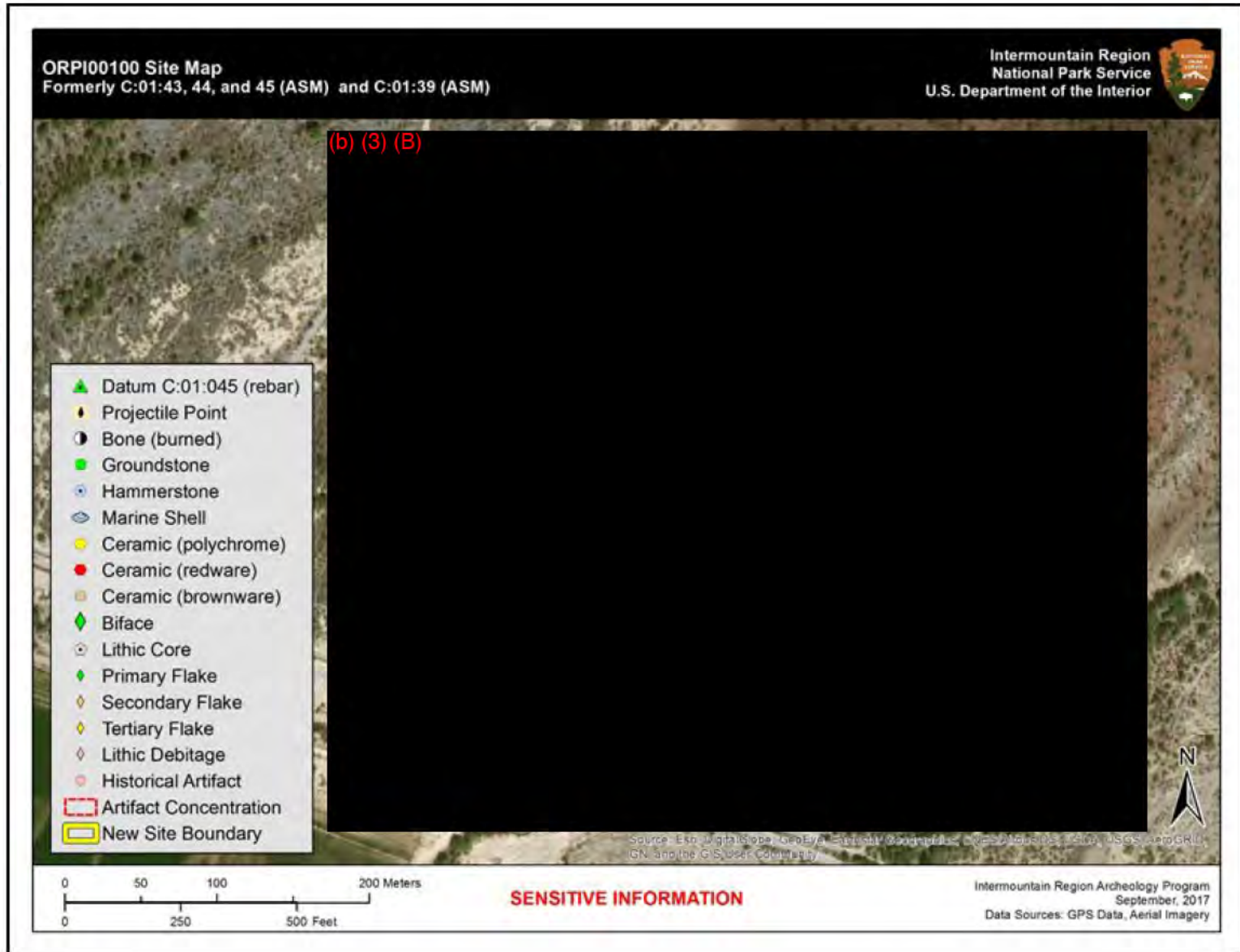


Figure 4. Archaeological sites identified in the Dos Lomitas vicinity (by J. Renaud 2019).

Figure 5. Map of ORPI 00100 (by G. Prothro 2017).



ORPI 00100

ORPI 00100 is a large (9.4 ha [23.2 ac]), precontact Native American sherd and lithic scatter extending across the broad plain immediately (b) (3) of the Dos Lomitas (Figures 4 and 5). An extensive, open-air site likely inhabited and used episodically by various nomadic groups over numerous centuries, ORPI 00100 is bounded by the dominant topographic features that frame this predominantly flat landscape—namely, the (b) (3) toe slope of the (b) (3) lomita (hill) on the north (roughly 565 m [1,854 ft] in length) and (b) (3) (B). In all likelihood, the site extends another 3.6 ha (9 ac) southward, terminating 0.3 km (0.2 mi) to the south where the (b) (3) (B). However, the present-day U.S.-Mexico International Border and border fence inhibits archaeological investigation of that prospect.

A total of 451 surface artifacts were identified and plotted across ORPI 00100, including 447 precontact Native American artifacts, 3 historic-period artifacts, and 1 piece of calcined bone of indeterminate age. The 447 precontact Native American artifacts include 296 flaked lithic artifacts, 8 ground stone artifacts, 139 ceramic sherds, and 4 marine shell fragments. The 3 historic-period artifacts consist of 1 iron horseshoe fragment, 1 iron strap fragment, and 1 fragment of purple manganese glass.

Two deeply gullied and actively eroding areas demarcate the presently-mapped southern boundary of the site north of the International Border fence: a 1.7 ha (4.2 ac) area to the southwest and a 0.8 ha (1.9 ac) area to the southeast. Both eroded areas were no doubt once parts of ORPI 00100, and their loss can be directly attributed to the International Border fence itself, which acts as an inadvertent dam, thwarting the natural, southerly flow of monsoon-generated floodwaters toward the Rio Sonoyta. Unfortunately, more of the site's southern periphery faces inevitable loss, as future floodwaters will extend the erosion (Veech 2018a:39-42).

Figure 6. Map of ORPI 00184 (by G. Prothro 2017).



ORPI 00184

ORPI 00184 is a 1.4 ha (3.5 ac) site consisting of 3 surface concentrations of precontact Native American artifacts, positioned (b) (3) (B) of a large, oblong berm adjacent to the north edge of (b) (3) (B) (Figures 4 and 6). The site lies roughly 75 m (246 ft) east of site ORPI 00100 on the east side of the north-to-south-trending (b) (3) (B) that defines the (b) (3) (B) boundary of ORPI 00100. Site ORPI 00184 was previously recorded as site SON C:1:36 (ASM) by Rankin (1995:551-553), who identified a total of 275 artifacts clustered in 2 concentrations (a.k.a., Locus 1 and Locus 2) across a 0.94 ha (2.3 ac) area. Later, the site was revisited by Collis in 2011 and by Bradford and Veech in 2012 prior to a 2014 UVR restoration project (Bradford et al. 2013:82-85).

A total of 237 surface artifacts (all precontact Native American artifacts) were identified and plotted across ORPI 00184 during the most recent site reassessment in August-September 2017, including 148 flaked lithic artifacts, 3 ground stone artifacts, 75 ceramic sherds, 7 marine shell fragments, and 4 pieces of fire-cracked rock (Veech 2018a:43-46).

ORPI 00330



Figure 7. Map of ORPI 00330 (by J. Renaud 2018).

ORPI 00330 is a dispersed surface scatter of flaked stone, ground stone, and precontact ceramic sherds encompassing an area of 8,550 m² (92,031 ft²) (Figures 4 and 7). The site is situated on an open flat (b) (3) (B) of the Dos Lomitas, its southern boundary positioned (b) (3) (B) One artifact concentration was recorded within the

northwestern quadrant of the site, measuring approximately 13 × 19 m (43 × 62 ft). This concentration contains the greatest diversity of artifacts within the site, including a marine shell fragment. A least 5 different lithic material types, including obsidian, were noted across the site, as is 1 thermal feature, measuring 1 m² (11 ft²). The site may be semi-permanent camp, and it likely is affiliated with the Dos Lomitas site complex. Several large pottery sherds were noted eroding out of an arroyo flanking the site's western boundary. This is notable, as it suggests that the site contains intact subsurface cultural deposits (Renaud 2018:20).

ORPI00420

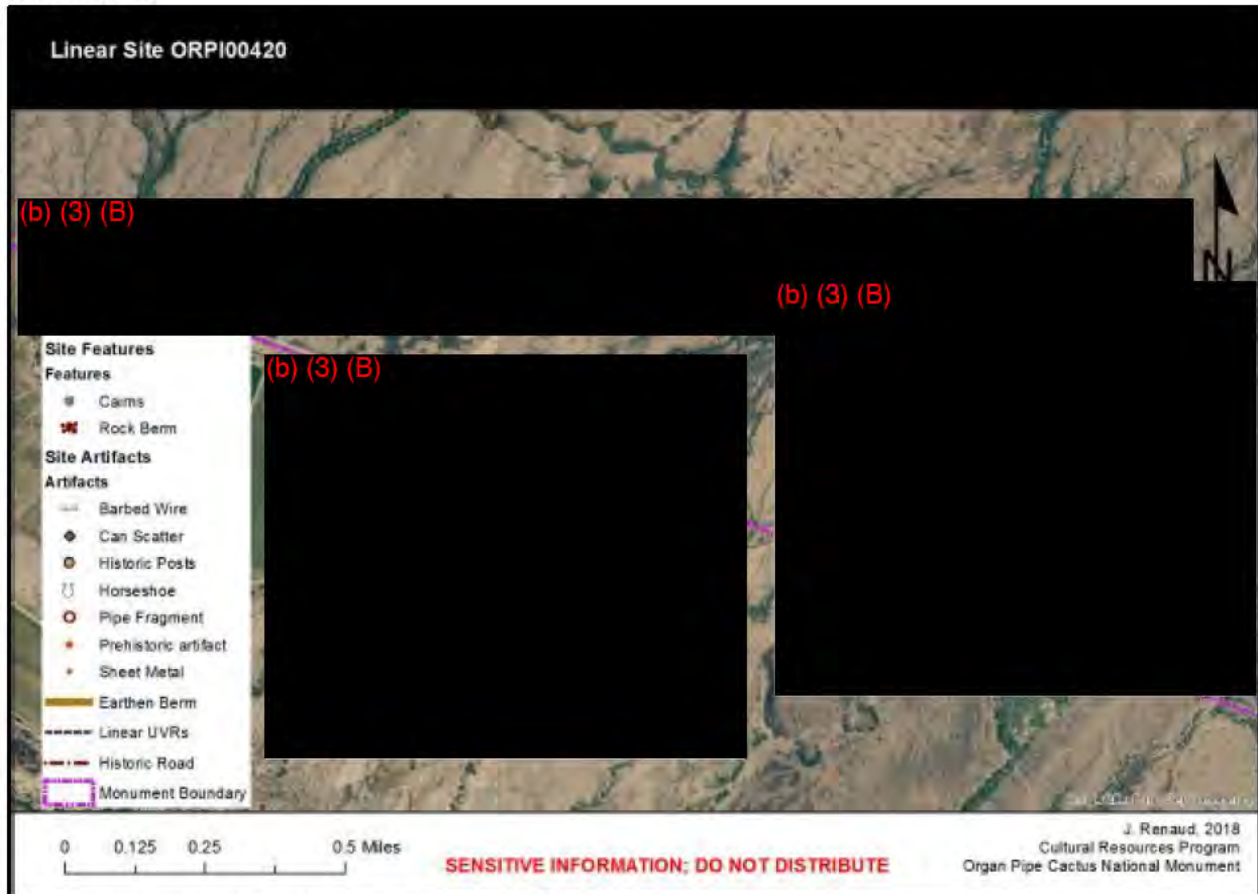


Figure 8. Map of ORPI 00420 (by J. Renaud 2018).

ORPI 00420 is an historic road trace of approximately 4 km (2.5 mi) in length, extending in a (b) (3) (B) from the Blankenship/Dos Lomitas ranch house (Figures 4 and 8). The road skirts the (b) (3) (B) of the more (b) (3) (B) approximately (b) (3) (B) (b) from its point of origin, before trending (b) (3) (B) to its point of intersection with (b) (3) (B) and the International Border. While the precise age of the road trace is unclear, available maps indicate that it predates the 1960s. This road is presumed to be a component of the Blankenship/Dos Lomitas cultural landscape. Artifacts and features associated with this road include wooden fence posts, barbed wire, and a boulder dam of approximately 6.1 m (20 ft) in length and 1.2 m (4 ft) in height. Additional investigations of this road are recommended, in

order to better assess its context within the overall Blankenship/Dos Lomitas cultural landscape (Renaud 2018:24-25).

ORPI 00421

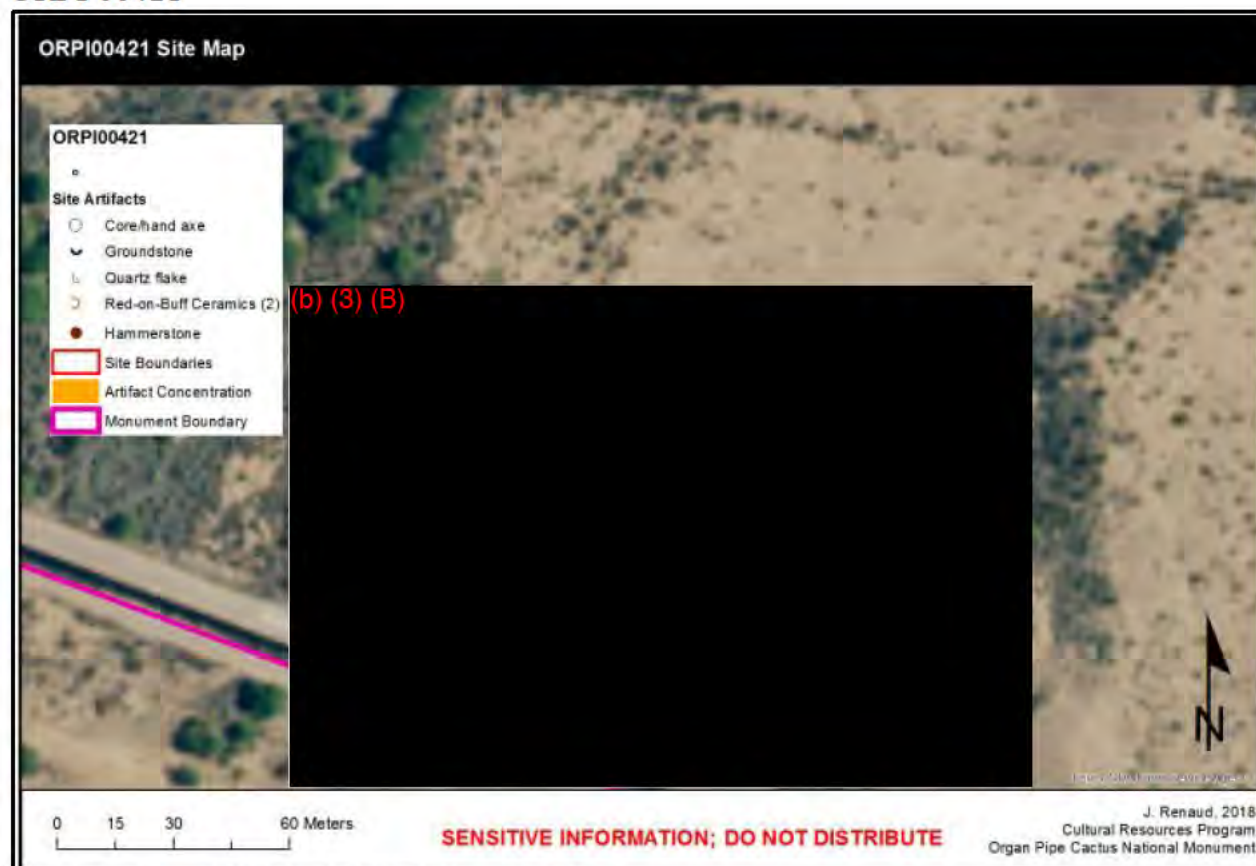


Figure 9. Map of ORPI 00421 (by J. Renaud 2018).

ORPI 00421 is a diffuse, dispersed precontact Native American lithic and ceramic sherd scatter encompassing an area of 9,960 m² (107,209 ft²) (Figures 4 and 9). This (b) (3) (B) scatter extends 83 m (272 ft) NNE/WSW and 120 m (394 ft) ENE/WSW, and its southern boundary lies less than (b) (3) (B) from the International Border. Ceramics within the site include red-on-buff wares and thick-walled, plain brown wares. One artifact concentration was identified and recorded near the eastern periphery of the site, measuring 23 × 7 m (75 × 23 ft), with an estimated density of 5 artifacts per 1 m² (10.8 ft²) (Renaud 2018:27).

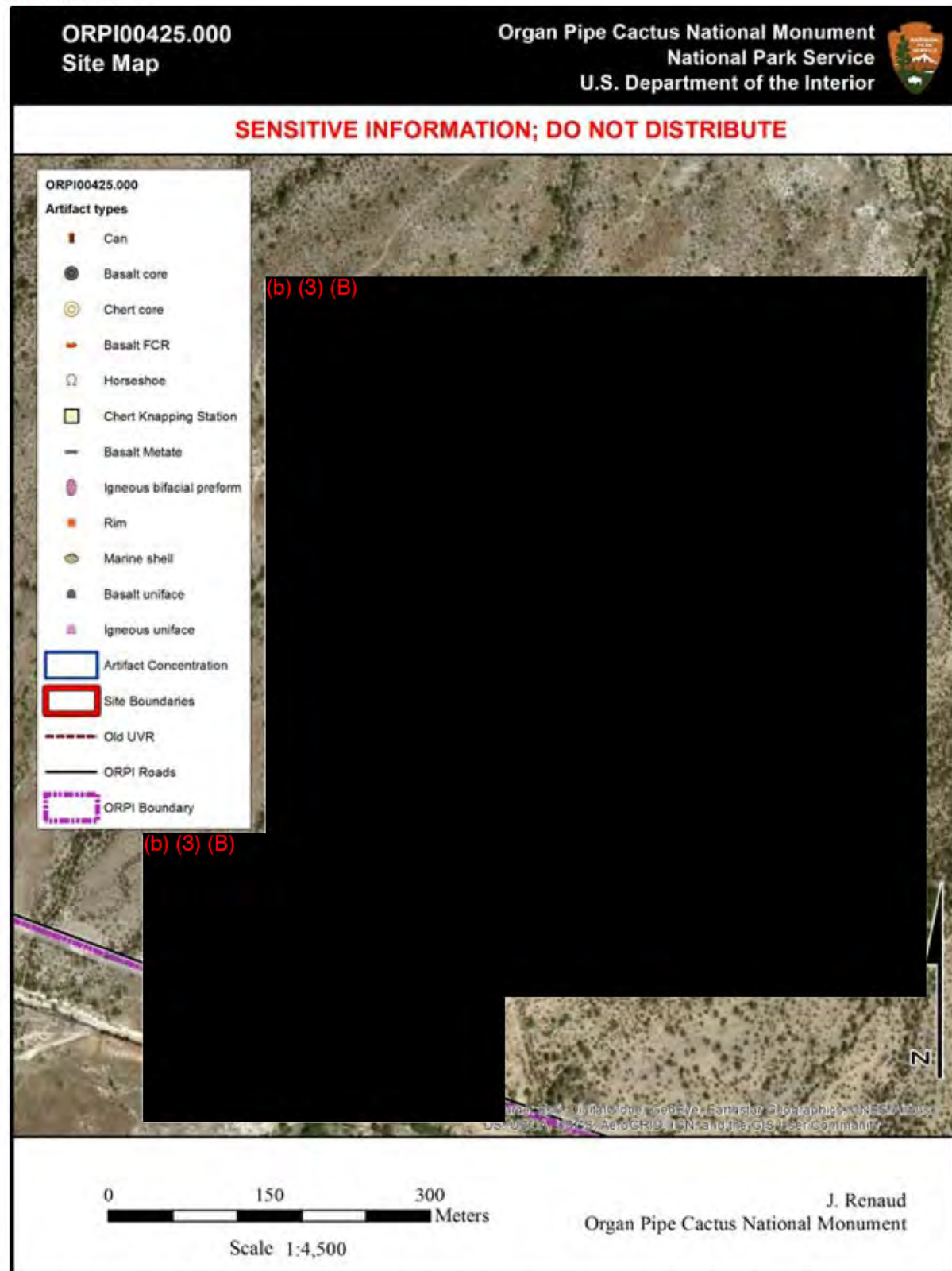


Figure 10. Map of site ORPI 00425, demarcating overall site boundaries and four lithic concentrations (J. Renaud 2018).

ORPI 00425 is a large, diffuse, precontact Native American lithic scatter of indeterminate age that extends across the broad summit of a (b) (3) (B) cobbled ridge that rises perhaps (b) (3) (B) the surrounding flat terrain of the Sonoyta Valley (Figures 4 and 10). The lithic scatter measures roughly 840 m (2,635 ft) (SW-NE) \times 252 m (827 ft) (WNW-ESE), encompassing an area of approximately 17.64 ha (43.6 ac). Four distinct lithic concentrations occur within the overall site boundary, referred to here as Concentrations 1 through 4. Traces of two old UVRs (a shorter, (b) (3) (B) one measuring 161 m [528 ft] in length and a longer, (b) (3) (B) one measuring 778 m [2,552 ft] in length) crosscut the site, but their impacts to site integrity appear to be minimal. The site is moderately vegetated with an understory of scattered creosote and bursage bushes, interspersed with occasional ocotillo, chain fruit cholla, palo verde trees, and small saguaros.

Concentration 1 is located in the southeastern quadrant of ORPI 00425, situated roughly 96 m (312 ft) north of (b) (3) (B). The concentration measures roughly 70 m (230 ft) (NW-SE) \times 60 m (197 ft) (NE-SW), encompassing an area of 0.32 ha (0.78 ac). Of the 4 artifact concentrations comprising ORPI 00425, Concentration 1 is the only one (b) (3) (B). A total of 49 flaked lithic artifacts were identified within Concentration 1, including 3 cores, 44 flakes (primary, secondary, and tertiary), and 2 pieces of debitage. Twenty-one (21) of the lithic artifacts are composed of chert, 19 of basalt, 8 of volcanic igneous rock, and 1 of jasper.

Concentration 2 is situated roughly midway along the ridge, its southern edge lying approximately 34 m (112 ft) north of the northern periphery of Concentration 1. The concentration measures approximately 244 m (801 ft) (NNE-SSW) \times 89 m (292 ft) (NW-SE), encompassing an area of 1.77 ha (4.38 ac). A total of 138 artifacts were identified within Concentration 2, 137 of which are flaked lithics and 1 of which is a vesicular basalt grinding slab. The flaked lithics include cores, flakes (primary, secondary, and tertiary), and debitage. Ninety-three (93) of the flaked lithic artifacts are composed of chert, 39 of basalt, and 8 of volcanic igneous rock.

Concentration 3, the largest of the 4 lithic concentrations contained within ORPI 00425, is dispersed across the northern third of the site, its southern periphery located some 27 m (89 ft) north of the northern periphery of Concentration 2. Concentration 3 measures approximately 315 m (1,033 ft) (SW-NE) \times 151 m (495 ft) (NW-SE), encompassing an area of 4.2 ha (10.3 ac). A total of 214 artifacts were identified within Concentration 3, including 212 flaked lithics, 1 fire-cracked basalt cobble, and 1 marine shell fragment. The flaked lithics include 2 unifacial tools and 2 bifacial preforms, plus numerous cores, flakes (primary, secondary, and tertiary), and pieces of debitage. One hundred thirty nine (139) of the flaked lithic artifacts are composed of chert, 53 of basalt, 18 of volcanic igneous rock, and 2 of jasper.

Concentration 4 is situated at the southern terminus of ORPI 00425, just north of (b) (3) (B). Its eastern periphery lies just 13.7 m (45 ft) from the western periphery of Cluster 1, while its northern periphery lies some 41 m (135 ft) from the southern periphery of Cluster 2. Cluster 4 measures approximately 170 m (558 ft) (NE-SW) \times 122 m (400 ft) (SE-NW), encompassing an area of 1.75 ha (4.32 ac). A total of 157 surface artifacts were identified within Concentration 4, 156 of which are undiagnostic precontact Native American flaked lithic artifacts and 1 of which is a nineteenth- or twentieth-century horseshoe. The flaked lithics include 1 bifacial preform,

plus an array of cores, flakes (primary, secondary, and tertiary), and pieces of debitage. One hundred and two (102) of the flaked lithics are composed of chert, 45 of basalt, and 9 of volcanic igneous rock (Veech 2018b:25-31).

Quitobaquito Area Sites

SON B:4:1 (ASM); SON B:4:9 (ASM); SON B:4:10 (ASM); SON B:4:11 (ASM); SON B:4:13 (ASM); SON B:4:14 (ASM); SON B:4:15 (ASM)

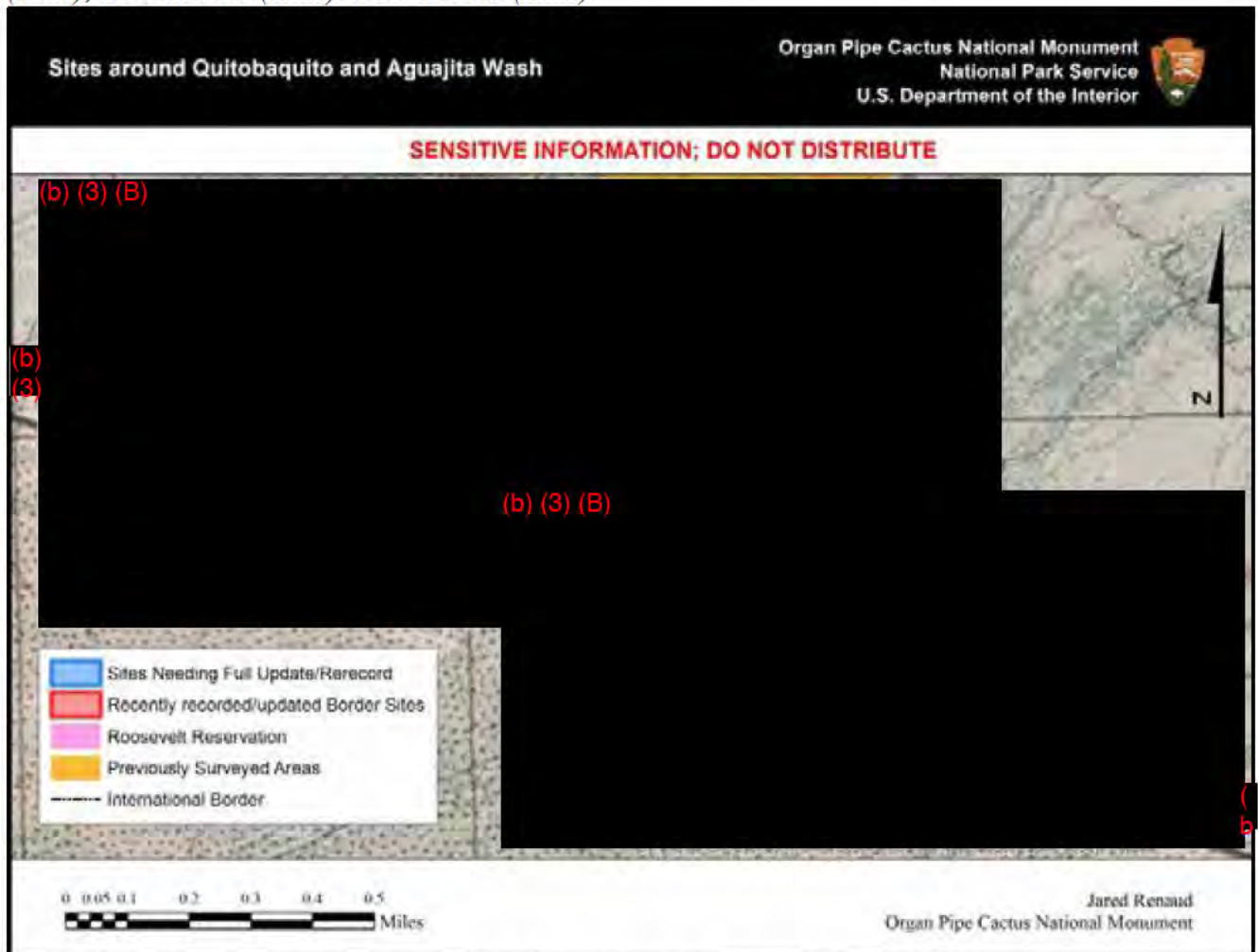


Figure 11. Archaeological sites identified in the Quitobaquito vicinity (by J. Renaud 2019).

Quitobaquito is a desert oasis with a perennial spring located less than 60 m (197 ft) from the International Border and some 19.3 km (12 mi) west of the Lukeville Port of Entry (Figure 11). For millennia Quitobaquito has been a crucial place for people to obtain water in an otherwise arid, austere landscape (Bell et al. 1980; Ferguson 2019; NPS 1996; Rankin 1995). Archaeological evidence of human presence at Quitobaquito extends back thousands of years, at least to Archaic times (10,500-1,700 B.P.). For centuries this desert oasis served as a vital stopping point for O’odham people traveling to the Gulf of California to acquire salt, and it continued to function as an important lay over spot well into the twentieth century (Ferguson et al. 2019). Initial archaeological survey of the Quitobaquito area by archaeologist Paul Ezell

(1951) resulted in the identification of SON B:4:1 (ASM). However, just a sketch map (Figure 12) and cursory field notes from Ezell's 1951 survey are known to survive, as well as various unprovenienced artifacts now at the WACC (Figure 13).

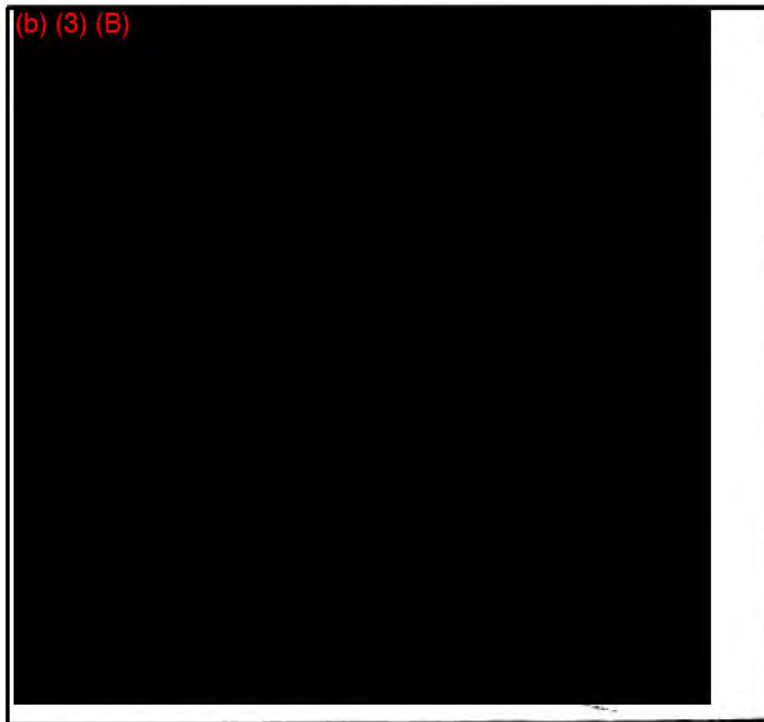


Figure 12. Paul Ezell's 1951 Sketch map of Quitobaquito (SON B:4:1), showing Hia C-ed O'odham structures and fields prior to NPS demolition (Arizona State Museum site files).



Figure 13. Unprovenienced artifacts collected by Paul Ezell from Quitobaquito (SON B:4:1) in 1951.

More recent and rigorous archaeological survey of the Quitobaquito Basin was conducted by Lynn Teague of the Arizona State Museum in 1977 (Teague 1977). During that survey Teague identified 9 precontact and historic-period loci within close proximity to the oasis which she subsequently recorded as 7 separate sites: SON B:4:9 through SON B:4:15 (ASM) (see Figure 10). Three of those sites—SON B:4:9; SON B:4:11; and SON B:4:13 (ASM)—are precontact Native American sites. The 4 others—SON B:4:10; SON B:12; SON B:4:14; and SON B:4:15 (ASM)—are associated with an historic-period Hia C-ed O’odham community which inhabited Quitobaquito from the 1860s through 1945 (Bell et al. 1980).

SON B:4:9 (ASM) (alternatively designated ORPI00193, as in Figure 11) is a multi-component, 47,000 m² (505,904 ft²) artifact scatter situated (b) (3) (B) of the Quitobaquito pond oasis that contains ceramic sherds, flaked and ground stone artifacts, and fire-cracked rock clusters (Figure 14). Lithics and features at SON B:4:9 (ASM) indicate use throughout the Archaic period (10,500-1,700 B.P.), while site ceramics denote use by Hohokam groups from circa 1,000 to 900 B.P. Additional artifacts and features illustrate later use of the site by historic-period Hia C-ed O’odham groups. While portions of SON B:4:9 (ASM) were destroyed by a NPS parking lot constructed in the 1960s, and the site nevertheless retains information about precontact and historic-period lifeways in the western Papagueria (Teague 1977:3-5).



Figure 14. Lynn Teague’s 1977 site map of SON B:4:9 (Arizona State Museum site files).

SON B:4:11 (ASM) (alternatively designated ORPI00195, as in Figure 11), situated roughly (b) (b) (3) (B) of the Quitobaquito pond, is a diffuse artifact scatter which possibly constitutes an area of precontact plant gathering and processing. Precontact artifacts identified across the site include orange plainware ceramics, basalt and obsidian flakes, and *glycemeris* marine shell fragments. Lesser quantities of historic-period artifacts (including tin scraps and

porcelain sherds) occur across the site as well, but those likely represent episodic trash dumping from the nearby Hia C-ed O'odham settlement (Teague 1977:3-5).

SON B:4:13 (ASM) (alternatively designated ORPI00196, as in Figure 11), situated on a terrace (b) (3) (B) of the Quitobaquito pond, is a multi-component site containing a circular depression which likely constitutes the remnants of a semi-subterranean Native American dwelling (Figure 15). As both precontact and historic-period artifacts occur across the site, this dwelling may have been built and occupied by either precontact Hohokam or later Hia C-ed O'odham. The depression may contain intact subsurface cultural deposits that could provide richer, more nuanced information about site occupants (Teague 1977:2-5).



Figure 15. Lynn Teague's 1977 site map of SON B:4:13 (Arizona State Museum site files).

The historic-period Hia C-ed O'odham village at Quitobaquito—comprised of SON B:4:10 (ORPI00194); SON B:12; SON B:4:14 (ORPI00218) [Figure 16]; and SON B:4:15—is significant for at least two reasons. First, it represents the northernmost extension of the Hia C-ed O'odham from their homeland in western Sonora, Mexico. Consequently, these sites constitute the only known Hia C-ed O'odham village site in the United States. Secondly, living members of various O'odham communities trace their lineages to Quitobaquito village residents and still consider the village site an important place (Bell et al. 1980; Ferguson et al. 2019; Teague 1977:3-12). These sites almost certainly retain important information about Hia C-ed O'odham land-use, subsistence, and lifeways from the mid-nineteenth through the mid-twentieth centuries.

(b) (3) (B)



Figure 16. Lynn Teague's 1977 site map of SON B:4:14 (Arizona State Museum site files).

SON B:4:33 (ASM)

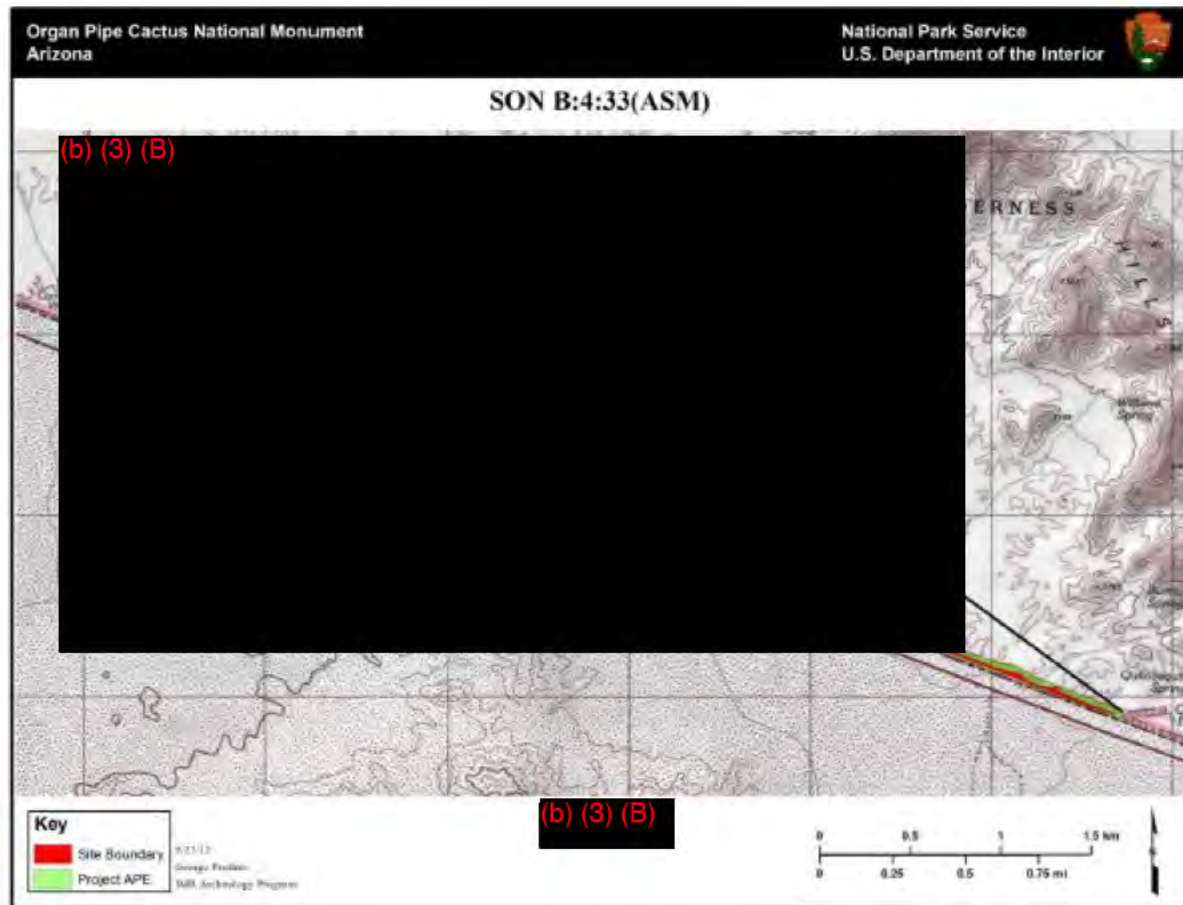


Figure 17. Map of SON B:4:33 (by G. Prothro 2013).

SON B:4:33 (ASM) is a long, narrow site measuring $6,090 \text{ m} \times \pm 15 \text{ m}$ ($19,980.3 \times 49.2 \text{ ft}$), or $91,350 \text{ m}^2$ and totaling 9.1 ha (22.5 ac) in size. It is situated along the (b) (3) (B) boundary of ORPI completely within the Roosevelt Reservation (Figure 17). The site is the remnants of a mid-twentieth-century fenceline that follows the park boundary from a position (b) (3) (B) and (b) (3) (B) to (b) (3) (B). This fenceline was erected by the NPS between April and July 1947 in an effort to: 1) prevent incursions of Mexican livestock into ORPI, 2) safeguard native Sonoran ungulate species (bighorn sheep, pronghorn antelope, deer) from the spread of hoof-and-mouth disease, and 3) mitigate unauthorized hunting and wood collecting within the park boundaries. Surviving structural elements of this border fenceline include: 43 stone “deadmen,” 20 wooden fence braces, and 77 wire fence stays. Among the other fence-related hardware within the site

boundaries are: double-strand barbed wire segments (n = 45), plain wire segments (n = 105), T-post wire clips (n ≥ 463), and barbed wire spools (n = 35).

Fifty-four (54) precontact isolated occurrences lie scattered along the length of this 6,090 m (19,980 ft) fenceline, testifying to human activity in the area long prior to the NPS. These precontact artifacts include: 9 ceramic sherds, 3 lithic cores, 30 non-utilized lithic flakes, 5 utilized lithic flakes, 1 ground stone fragment, 1 projectile type (unknown type), 1 unifacial tool, and 4 marine shell fragments (Bradford et al. 2013:33-36).

SON B:4:34 (ASM)

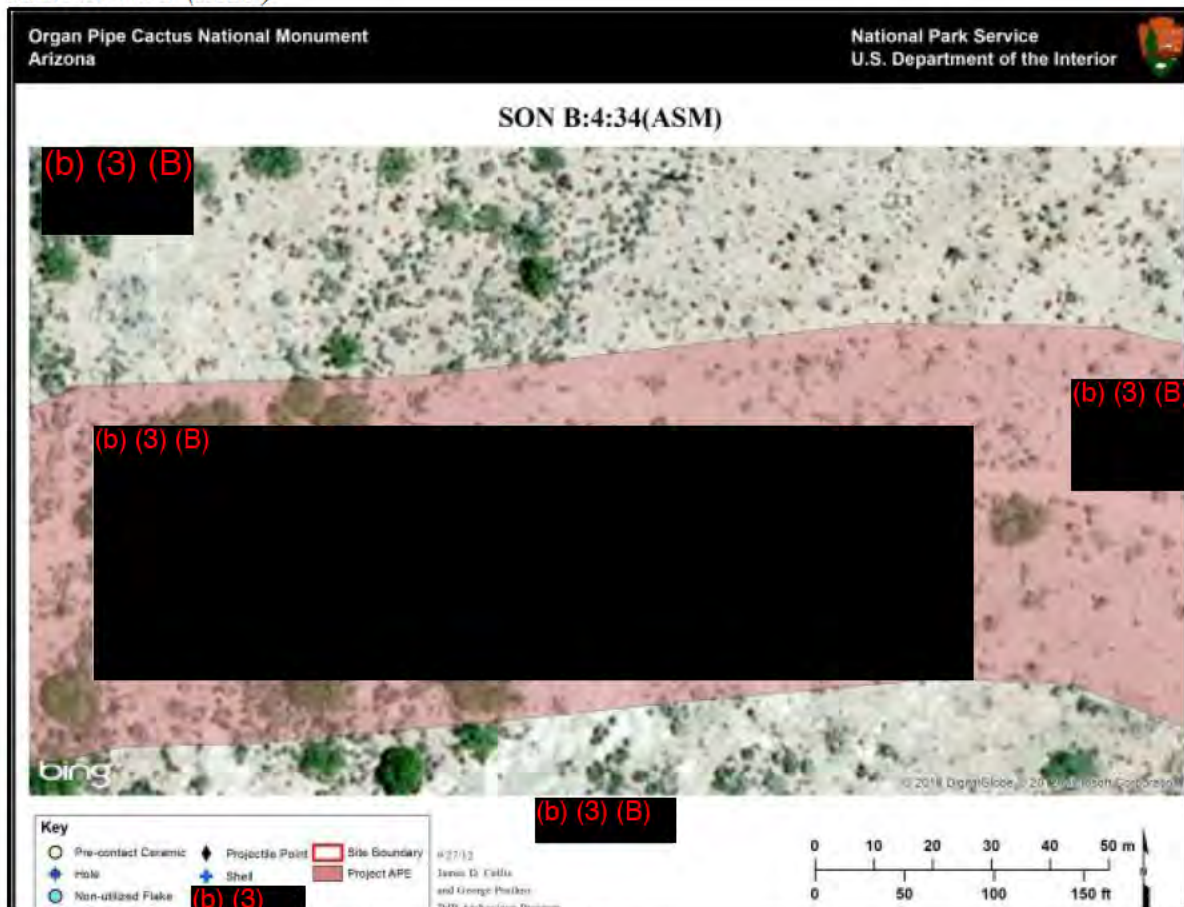


Figure 18. Map of SON B:4:34 (by G. Prothro 2013).

SON B:4:34 (ASM) is a small 0.2 ha (0.5 ac) surface artifact scatter situated approximately (b) (3) (B) (b) (3) (B) of (b) (3) (B) and roughly (b) (3) (B) north of (b) (3) (B) (Figure 18). The site measures 30 m (94 ft) (N-S) × 75 m (246 ft) (E-W). Site artifacts include at least 32 non-utilized lithic flakes of obsidian (16), rhyolite (5), basalt (6), and chert (5). Other recorded site artifacts include 1 sand-tempered redware ceramic sherd, 1 marine shell fragment, and 1 basalt projectile point tentatively identified as an Elko Eared variant (ca. 2,500 – 500 BCE).

The artifacts within SON B:4:34 (ASM) occur within a small, bounded area and include distinct groupings among the non-utilized flakes of like materials. This suggests that some degree of integrity remains despite UVR damage across the northern half of the site. Given the occurrence of a Middle Archaic projectile point, obsidian flakes, probable Hohokam ceramics, and fragmentary marine shell, SON B:4:34 (ASM) has the potential to yield information about the both the sequential occupation of the Western Papagueria and regional precontact trade patterns (Bradford et al. 2013:37-38).

SON C:1:79 (ASM)



Figure 19. Map of SON C:1:79 (by G. Prothro 2013).

SON C:1:79 (ASM) is a precontact artifact scatter measuring 4.2 ha (10.4 ac) located just (b) (3) (B) of the (b) (3) (B) (Figure 19). The site has suffered significantly from unauthorized vehicular traffic, and some of the western portion of the site has been impacted by erosion. Nevertheless, the site retains integrity, as evidenced by three intact artifact clusters recorded within its boundaries—two within the northern half and one within the southern half.

Archaeological technician James Collis mapped 105 artifacts within these clusters, including 3 utilized stone flakes, 14 non-utilized stone flakes, 5 cores, 3 ground stone tools, 1 marine shell fragment, and 79 ceramic sherds, including three red-on-brown decorated sherds. The site is situated less than (b) (3) (B) of the Sonoyta River. Based on the site's location and on the density and variety of site artifacts (with a preponderance of ceramics), SON C:1:79 (ASM) may be a habitation site and one possibly associated with the Dos Lomitas village complex identified by Rankin (1995:115) (b) (3) (B) to the (b) (3) (B). As such, the site has the potential to yield information about precontact regional occupation, utilization, and trade patterns through time (Bradford et al. 2013:41-42).

O'odham Trails and Roads Across ORPI (ORPI 00298 and 00299)

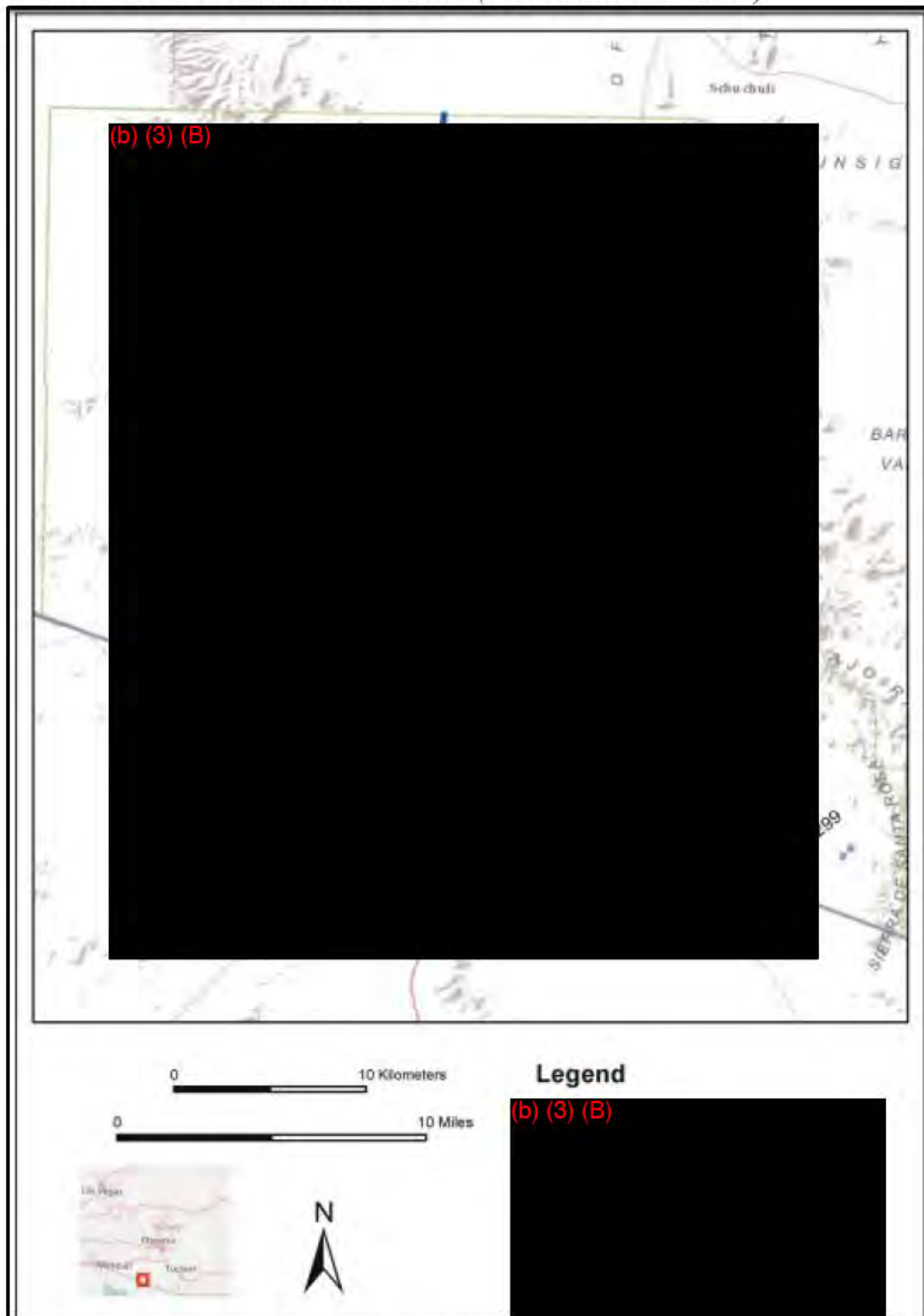


Figure 20. Map of precontact, protohistoric, and historic-period O'odham trail corridors crossing ORPI (from Ferguson et al. 2019:88).

ORPI 00298

ORPI 00298 is comprised of pedestrian trails and wagon roads associated with the Quitobaquito oasis and its perennial springs (Figures 20 and 21). These trails and roads extend in all directions from Quitobaquito. Building off previous archaeological surveys around Quitobaquito conducted by Rankin (1995) and Rankin, Antone, and Waters (1993a, 1993b), Ferguson and Hopkins identified 29 pedestrian trail segments and one wagon road segment in the vicinity of Quitobaquito, totaling 2.95 km (1.83 mi) of trails and roads (Ferguson et al. 2019:183-188).

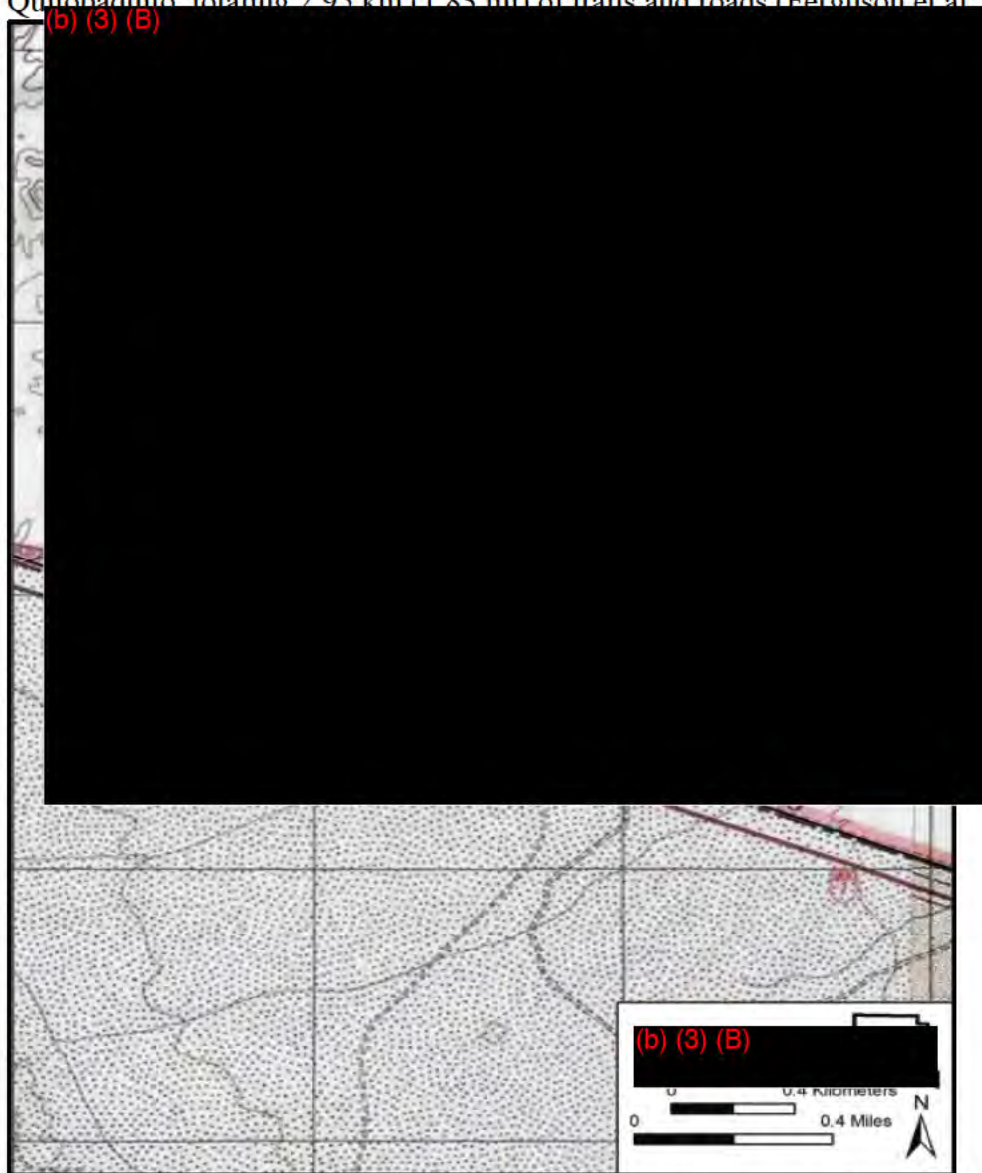


Figure 21. Map of ORPI 00298, a series of precontact, protohistoric, and historic-period O’odham trails and roads around Quitobaquito (from Ferguson et al. 2019:187).

Based on their field observations, Ferguson and Hopkins conclude that the Quitobaquito cultural landscape maintains integrity, and that Quitobaquito continues to play a critical role in the social, economic, and ritual lives of present-day O’odham groups. They subsequently recommend that the Quitobaquito travel node (i.e., ORPI 00298) be considered eligible for NRHP listing under Criteria A and D (Ferguson et al. 2019:188).

ORPI 00299

ORPI 00299 is comprised of a series of pedestrian trails located on a small and narrow ridge in the (b) (3) (B), (b) (3) (B), (b) (3) (B) (Figures 20 and 22).



Figure 22. Map of ORPI 00299, a series of precontact, protohistoric, and historic-period O'odham trails near Blankenship Ranch (from Ferguson et al. 2019:194).

Ferguson and Hopkins recorded 12 segments of ORPI 00299 for a total length of 819 m (2,687 ft), with segments ranging between 8 m (26.2 ft) and 188 m (617 ft) in length. These trail segments, ranging between 40 cm (15.7 in) and 43 cm (16.9 in) in width, trend northeast-southwest and appear to represent a single pedestrian trail. Numerous flaked stone artifacts occur alongside the trail segments including basalt, chert, and chalcedony debitage and a basalt core. Based on these associated artifacts, Ferguson and Hopkins interpret these pedestrian trail segments as either precontact or protohistoric (Ferguson et al. 2019:193-197).

VI. Survey Methodology

The scope and objectives of the June 2019 ORPI Roosevelt Reservation archaeological survey were established in advance of actual fieldwork through a series of emails and telephone conference calls involving IMRAP archaeologists, SOAR archaeologists, and ORPI managers. Collectively, these parties agreed that the aim of the June 2019 field project ought to be baseline Section 110 inventory, covering portions of ORPI's southern boundary not rigorously examined during previous ORPI archaeological survey projects. The assembled field team, it was decided, would systematically survey as many of the previously unsurveyed stretches of the park's southern boundary as was possible over five days of fieldwork, with the ultimate goal (not achieved by the project's end) being 100 percent archaeological inventory of the entire ORPI Roosevelt Reservation.

With these project goals in mind, archaeologist Iraida Rodriguez subsequently examined all available ORPI geospatial data files and precisely plotted which stretches of the park's southern boundary still required systematic archaeological survey (see Appendix A). Survey team members then downloaded Rodriguez's project maps onto their smartphones and tablets using the Avenza Maps mobile app (<https://www.avenza.com>) and thereafter employed Avenza to guide them to various areas of the park boundary requiring baseline archaeological inventory.

The June 2019 ORPI Roosevelt Reservation survey was solely a pedestrian survey. No subsurface testing was conducted, nor were any geophysical instruments employed. Nevertheless, in an effort to make the survey as rigorous and comprehensive as possible, the five participating archaeologists walked parallel, east-west transects spaced at 5 m (16.4 ft) intervals, covering a cumulative north-south distance of 25 m (82 ft). All survey transects were oriented parallel with the U.S.-Mexico International Border, with the southernmost 5 m- (16.4 ft-) transect positioned along the northern edge of the park's Fenceline Road (Figure 23).



Figure 23. Project archaeologists preparing to walk an east-west survey transect, spaced at 5 m (16.4 ft) intervals, view to the northwest (photo by A. Veech).

Whenever the archaeologists encountered surface artifacts or features, they marked those artifacts and features with pin flags for subsequent recording. Areas with clusters of pin flags were speculated to be activity areas or sites, and across those areas the archaeologists broke from their regimented survey transects in an effort to identify all surface artifacts in the vicinity (Figure 24).



Figure 24. Project archaeologists pin flagging ORPI 2019 B, Site 3 in advance of recording, view to the north (photo by A. Veech).

The archaeologists used the Avenza Maps mobile app, a Trimble Geo 7X unit, and compasses for navigational purposes. Likewise, they employed a Trimble Geo 7X unit to record all findings and geospatially plot those findings with sub-meter accuracy (Figure 25). Additionally, they used a Nikon Coolpix W300 digital camera to photograph all findings.



Figure 25. Jake DeGayner recording data on a Trimble unit within ORPI Roosevelt Reservation (photo by A. Veech).

Following these methodological protocols, the archaeologists surveyed some 18.2 km (11.3 mi) of the ORPI Roosevelt Reservation (see Appendix B), totaling identified and recorded 35 isolated occurrences, 20 isolated features, and 5 archaeological sites (Figure 26) over the course of their 5-day survey, which ran from June 24–28, 2019. The 35 isolated occurrences and 20 isolated features are summarized at the end of this report (see Appendices C-F). The following section describes the 5 archaeological sites.



Figure 26. Locations of 5 archaeological sites along the southern boundary of ORPI identified and recorded during June 2019 survey (Google Earth map, modified by A. Veech).

VII. Description of Newly Recorded ORPI Roosevelt Reservation Archaeological Sites

ORPI 2019 B, Site 1

ORPI 2019 B, Site 1 is a precontact Native American surface artifact scatter measuring 0.19 ha (0.47 ac) in size that is located approximately 2.93 km (1.82 mi) ^{(b) (3) (B)} of the Lukeville Port of Entry, ^{(b) (3) (B)} of the ^{(b) (3) (B)} of the park, and ^{(b) (3) (B)} of the ^{(b) (3) (B)} (Figures 27-29, see Figure 26). The site extends roughly 85 m (279 ft) (N-S) × 38 m (125 ft) (E-W) across the broad alluvial flats of the Sonoyta Valley. Site vegetation consists predominately of creosote, bursage, and saltbrush. A northeast-southwest-trending drainage lies approximately ^{(b) (3) (B)} west of the site, while another ^{(b) (3) (B)} ^{(b) (3) (B)} lies roughly ^{(b) (3) (B)} east of the site. The Sonoyta River lies roughly ^{(b) (3) (B)} to the ^{(b) (3) (B)}.

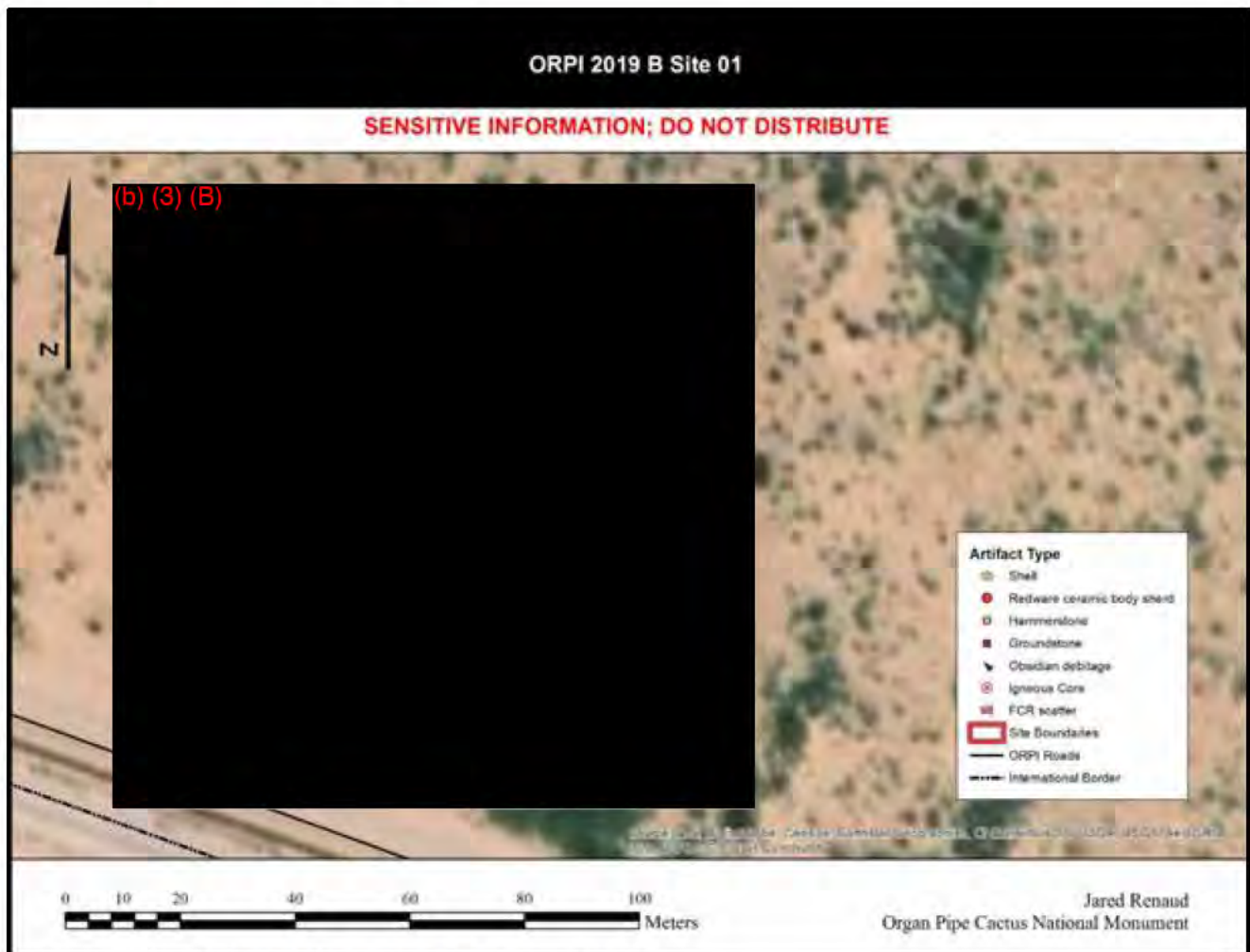


Figure 27. Map of ORPI 2019 B, Site 1 (by J. Renaud 2019).



Figure 28. ORPI 2019 B, Site 1, view to the north (photo by A. Veech).



Figure 29. ORPI 2019 B, Site 1, view to the south (photo by A. Veech).

A total of 116 artifacts were identified across ORPI 2019 B, Site 1, including 55 non-utilized flaked stone artifacts, 2 ground stone fragments, 1 hammerstone, 2 pieces of fire-cracked rock, 51 plain, undecorated ceramic sherds, and 5 marine shell fragments (see Tables 5-7). Lithic material types within the site assemblage include volcanic igneous rock, chert, chalcedony, basalt, and obsidian. None of the site lithic artifacts, however, are diagnostic. Site ceramic sherds denote a post-Archaic (post 300 CE) occupation, likely during the Hohokam Classic period (1150-1400 CE) (see pp. 9 of report).

Table 5. Inventory of non-utilized flaked stone artifacts (n=55), ORPI 2019 B, Site 1.

	Tested Cobble	Core	Primary Flake	Secondary Flake	Tertiary Flake	Debitage	Total
Material Type							
Volcanic Igneous Rock		6	4	6		1	17
Chert				1		1	2
Chalcedony		2	1	8	5	6	22
Basalt				1	1	1	3
Obsidian				5	1	5	11
Total		8	5	21	7	14	55

Table 6. Inventory of other lithic artifacts (n=5), ORPI 2019 B, Site 1.

	Ground Stone	Hammerstone	Fire-Cracked Rock	Total
Material Type				
Volcanic Igneous Rock	1	1	2	4
Vesicular Basalt	1			1
Total	2	1	2	5

Table 7. Inventory of ceramics and marine shell (n=56), ORPI 2019 B, Site 1 (by S. Hart).

	Body Sherd	Rim Sherd	Fragment	Total
Brownware	45	1		46
Redware	5			5
Marine Shell			5	5
Total	50	1	5	56

A tight clustering of flaked obsidian artifacts (n=11) located within the northeastern quadrant of the site (see Figure 27)—an area of no more than 2 m (6.6 ft) in diameter—likely constitutes a knapping station, the locus of a discrete episode of lithic reduction. Together with the 5 marine shell fragments, these obsidian artifacts denote the southwest-to-northeast transport of exotic raw materials from the Gulf of California and Pinacate Peaks of Sonora, Mexico into southwestern Arizona.

Given its proximity to the Sonoyta River and the density and variety of its artifacts, ORPI 2019 B, Site 1 likely is an encampment that was occupied either over a single, extended period of time or over multiple, episodic ones. It may be associated and contemporaneous with the dense concentration of seasonal occupation sites located roughly (b) (3) (B) further east around (b) (3) (B). Thus, the site holds potential for yielding information about precontact regional occupation, utilization, and trade patterns through time.

ORPI 2019 B, Site 2

ORPI 2019 B, Site 2 is a small, but moderately dense, precontact Native American surface artifact scatter measuring 0.02 ha (0.05 ac) in size. The site is located approximately (b) (3) (B) of the (b) (3) (B) and (b) (3) (B) of the (b) (3) (B) of the park (Figures 30-32, see Figure 26), and it ranges roughly 28 m (92 ft) (SW-NE) × 17 m (56 ft) (NW-SE) across the broad alluvial flats of the Sonoyta Valley, some (b) (3) (B) west of the (b) (3) (B) of the Sierra de Santa Rosa mountain range. Site vegetation consists predominately of creosote, bursage, and salt brush. A (b) (3) (B) drainage lies approximately (b) (3) (B) east of the site, while the Sonoyta River lies roughly (b) (3) (B) to the (b) (3) (B).

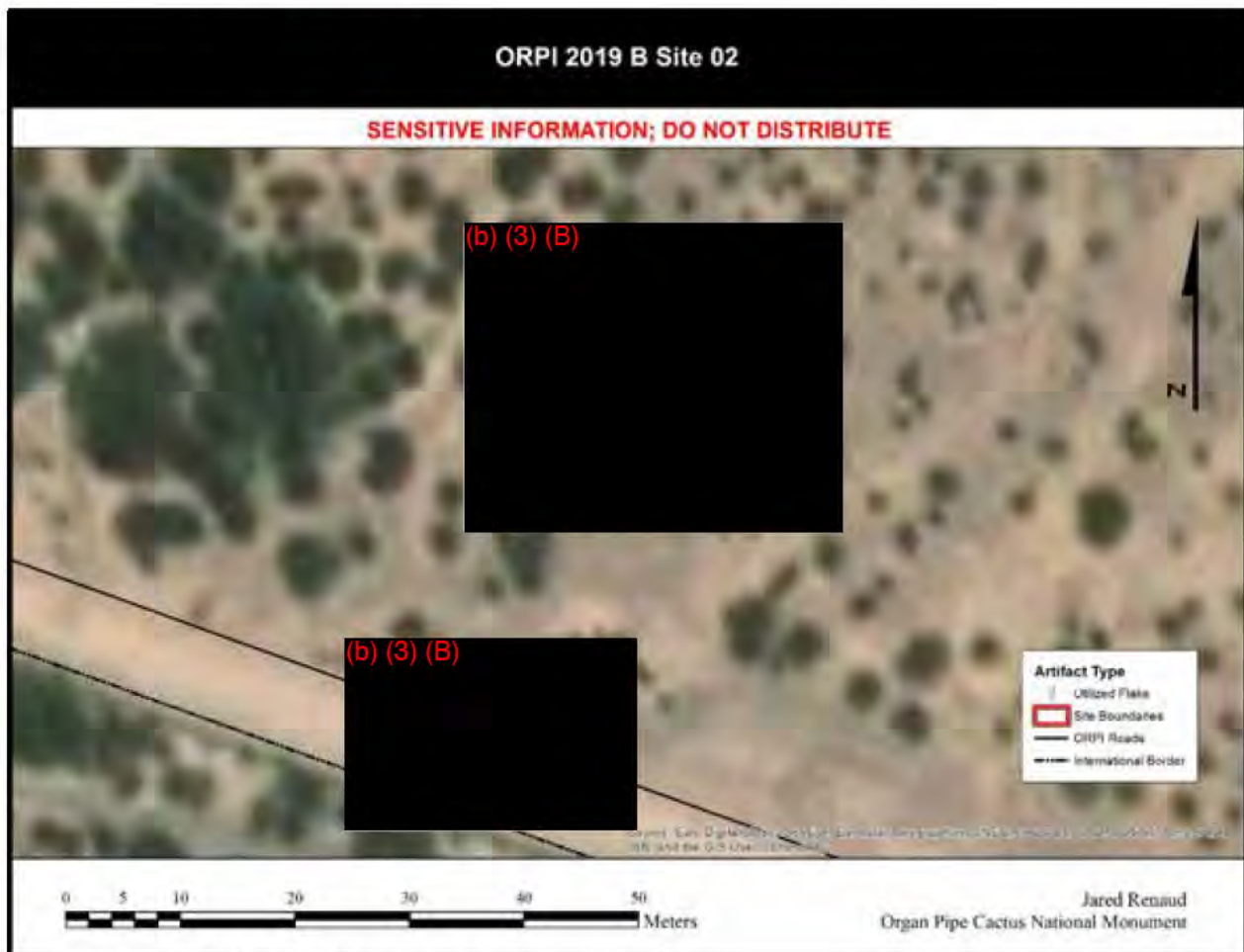


Figure 30. Map of ORPI 2019 B, Site 2 (by J. Renaud 2019).



Figure 31. ORPI 2019 B, Site 2, view to the north (photo by A. Veech).



Figure 32. ORPI 2019 B, Site 2, view to the south (photo by A. Veech).

A total of 56 artifacts were identified across ORPI 2019 B, Site 2, including 31 non-utilized flaked stone artifacts, 3 utilized secondary flakes, and 22 plain, undecorated ceramic sherds (see Tables 8-10 and Appendix H, Figures 1-2). Lithic material types within the site assemblage include volcanic igneous rock, chert, chalcedony, and basalt. None of the site lithic artifacts are diagnostic. Site ceramic sherds denote a post-Archaic (post 300 CE) occupation, likely during the Hohokam Classic period (1150-1400 CE) (see pp. 9 of report).

Table 8. Inventory of non-utilized flaked stone artifacts (n=31), ORPI 2019 B, Site 2 (by I. Rodriguez).

	Tested Cobble	Core	Primary Flake	Secondary Flake	Tertiary Flake	Debitage	Total
Material Type							
Volcanic Igneous Rock			1				1
Chert				1		5	6
Chalcedony			4	3	1	4	12
Basalt			7	1	3	1	12
Total			12	5	4	10	31

Table 9. Inventory of utilized flaked stone artifacts (n=3), ORPI 2019 B, Site 2 (by I. Rodriguez).

Artifact Number	Artifact Type	Material Type	Dimensions	Usewear	Comments	Total
1	Utilized secondary flake	basalt	40×15×3 cm	microflaking on lateral edge and edge rounding		
2	Utilized secondary flake	chalcedony		microflaking on lateral edge and edge rounding	retouch on lateral edge	
3	Utilized secondary flake	volcanic igneous rock	50×30×10 cm	microflaking on lateral edge and polish	retouch on lateral edge	
						3

Table 10. Inventory of ceramics (n=22), ORPI 2019 B, Site 2 (by S. Hart).

	Body Sherd	Rim Sherd	Total
Material Type			
Brownware	20		
Redware	2		
Total	22		22

Given its compact size, ORPI 2019 B, Site 2 may constitute the remnants of a brief encampment, perhaps of no more than a single night in duration. It may be associated and contemporaneous with the dense concentration of seasonal occupation sites located roughly 6 km (3.7 mi) further west around southern toe slopes of the Dos Lomitas.

ORPI 2019 B, Site 3

ORPI 2019 B, Site 3 is a low-density, precontact Native American surface lithic scatter measuring 0.13 ha (0.31 ac) in size that is located approximately (b) (3) (B) of the (b) (3) (B), (b) (3) (B) west of the (b) (3) (B) of the park, and (b) (3) (B) west of ORPI 2019 B, Site 2 (Figures 33-35, see Figure 26). The site extends roughly 70 m (230 ft) (SSW-NNE) × 50 m (164 ft) (WNW-ESE) across the broad alluvial flats of the Sonoyta Valley, and its (b) (3) (B) than (b) (3) (B) north of (b) (3) (B) within the Roosevelt Reservation. Site vegetation consists mostly of an understory of creosote bushes, punctuated by several chain fruit cholla. A (b) (3) (B)-trending drainage lies approximately (b) (3) (B) west of the site, while another (b) (3) (B) trending drainage lies roughly (b) (3) (B) east of the site. The Sonoyta River lies roughly (b) (3) (B) to the south-southwest.

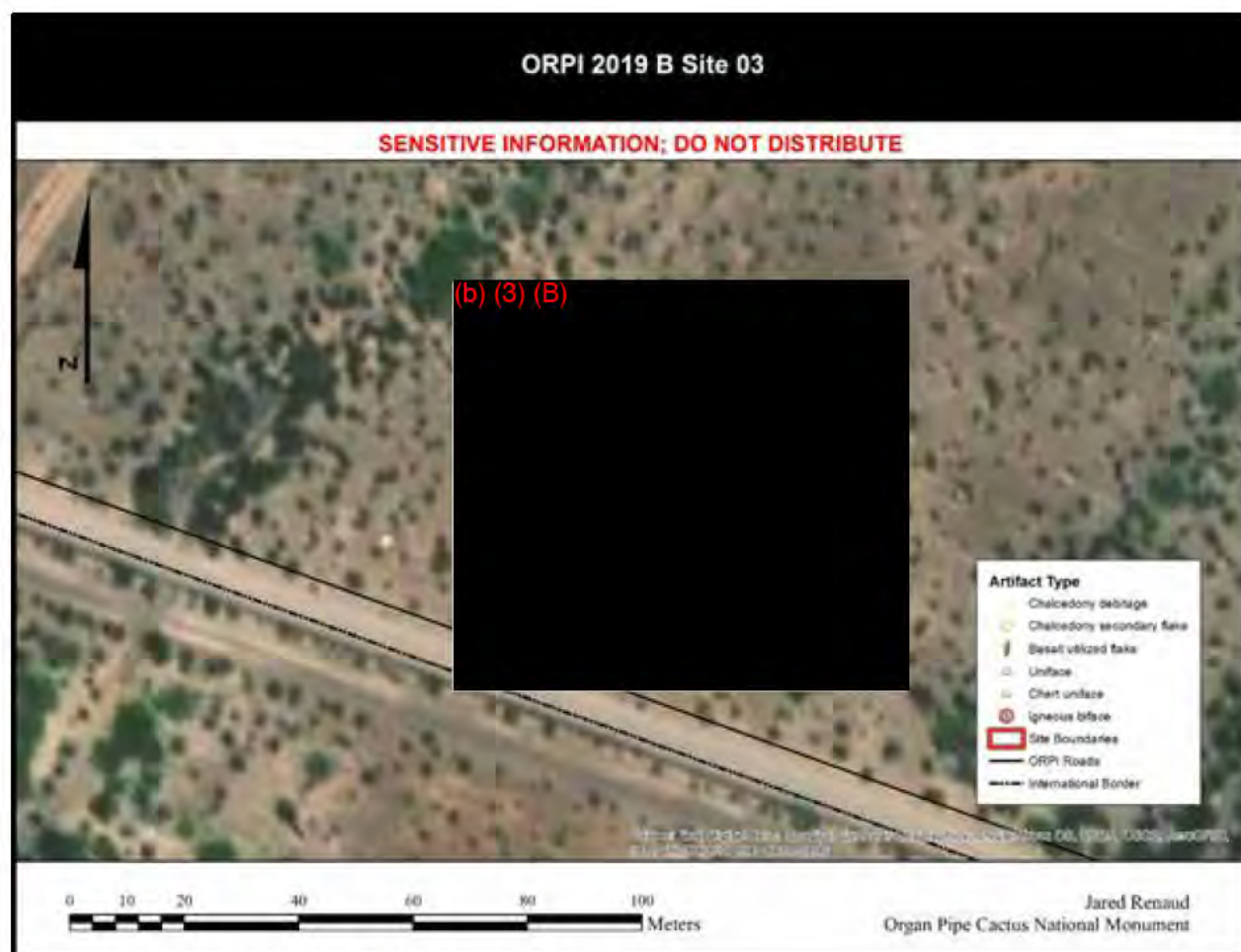


Figure 33. Map of ORPI 2019 B, Site 3 (by J. Renaud 2019).



Figure 34. ORPI 2019 B, Site 3, view to the north (photo by A. Veech).



Figure 35. ORPI 2019 B, Site 3, view to the south (photo by A. Veech).

A total of 32 lithic artifacts were identified across ORPI 2019 B, Site 3, including 27 non-utilized flaked stone artifacts, 3 utilized flakes, 1 uniface, and 1 bifacial preform (see Tables 11-12 and Appendix H, Figures 3-5). Lithic material types within the site assemblage include rhyolite, volcanic igneous rock, chert, chalcedony, and basalt. None of the site lithic artifacts are diagnostic.

A small cobble cluster of only a single course in height and of indeterminate function also occurs within the site boundaries (Figure 36). This cluster measures approximately 65 cm (25.6 in) (N-S) × 46 cm (18.1 in) (E-W) × 9 cm (3.5 in) (height). At least 15 volcanic igneous rock and vesicular basalt cobbles comprise the cluster, ranging in size between 27×20×9 cm (10.6×7.9×3.5 in) and 7×6×4 cm (2.8×2.4×1.6 in).

Table 11. Inventory of non-utilized flaked stone artifacts (n=27), ORPI 2019 B, Site 3 (by I. Rodriguez).

	Tested Cobble	Core	Primary Flake	Secondary Flake	Tertiary Flake	Debitage	Total
Material Type							
Rhyolite		1	1				2
Chert			5	5	1	1	12
Chalcedony			4		4	5	13
Total		1	10	5	5	6	27

Table 12. Inventory of utilized flaked stone artifacts (n=5), ORPI 2019 B, Site 3 (by I. Rodriguez).

Artifact Number	Artifact Type	Material Type	Usewear	Dimensions (mm)	Comments	Total
1	Bi-directional edge	volcanic igneous rock		60×50×10		
2	Utilized flake	rhyolite		30×30×17		
3	Utilized secondary flake	basalt	edge rounding and microflaking on lateral margin	47×24×17	early stage	
4	Uniface	chert		46×47×18		
5	Bifacial preform	volcanic igneous rock		90×86×15	3 flake scars	
						5



Figure 36. Cobble cluster within ORPI 2019 B, Site 3, view to the north (photo by A. Veech).

ORPI 2019 B, Site 3 may be the remnants of a short-term encampment, perhaps one used and occupied at some point during the Archaic period (8,500 BCE – 300 CE) (see pp. 7 of report). However, this interpretation is purely speculative, based on the absence any ceramic artifacts.

ORPI 2019 B, Site 4

ORPI 2019 B, Site 4 is (as presently recorded) a small precontact Native American (b) (3) artifact scatter measuring 0.02 ha (0.05 ac) in size, located approximately (b) (3) (B) of the (b) (3) (B), (b) (3) (B) east of the (b) (3) (B) of the park, and (b) (3) (B) east of (b) (3) (B) (Figures 37-39, see Figure 26). The site lies against the (b) (3) (B) of a low-lying, (b) (3) (B)-trending hill within the La Abra Plain, and it extends roughly 23 m (75.5 ft) (N-S) × 16 m (52.5 ft) (E-W). Its southern edge lies (b) (3) (B) north of (b) (3) (B) within the Roosevelt Reservation. Site vegetation consists predominately of bursage and saltbrush, interspersed with occasional chain fruit cholla and saguaro. A small (b) (3) (B)-trending drainage lies approximately (b) (3) (B) east of the site, and another one lies roughly (b) (3) (B) to the west. The Sonoyta River lies roughly (b) (3) (B) to the southwest, and Quitobaquito lies (b) (3) (B) to the east.

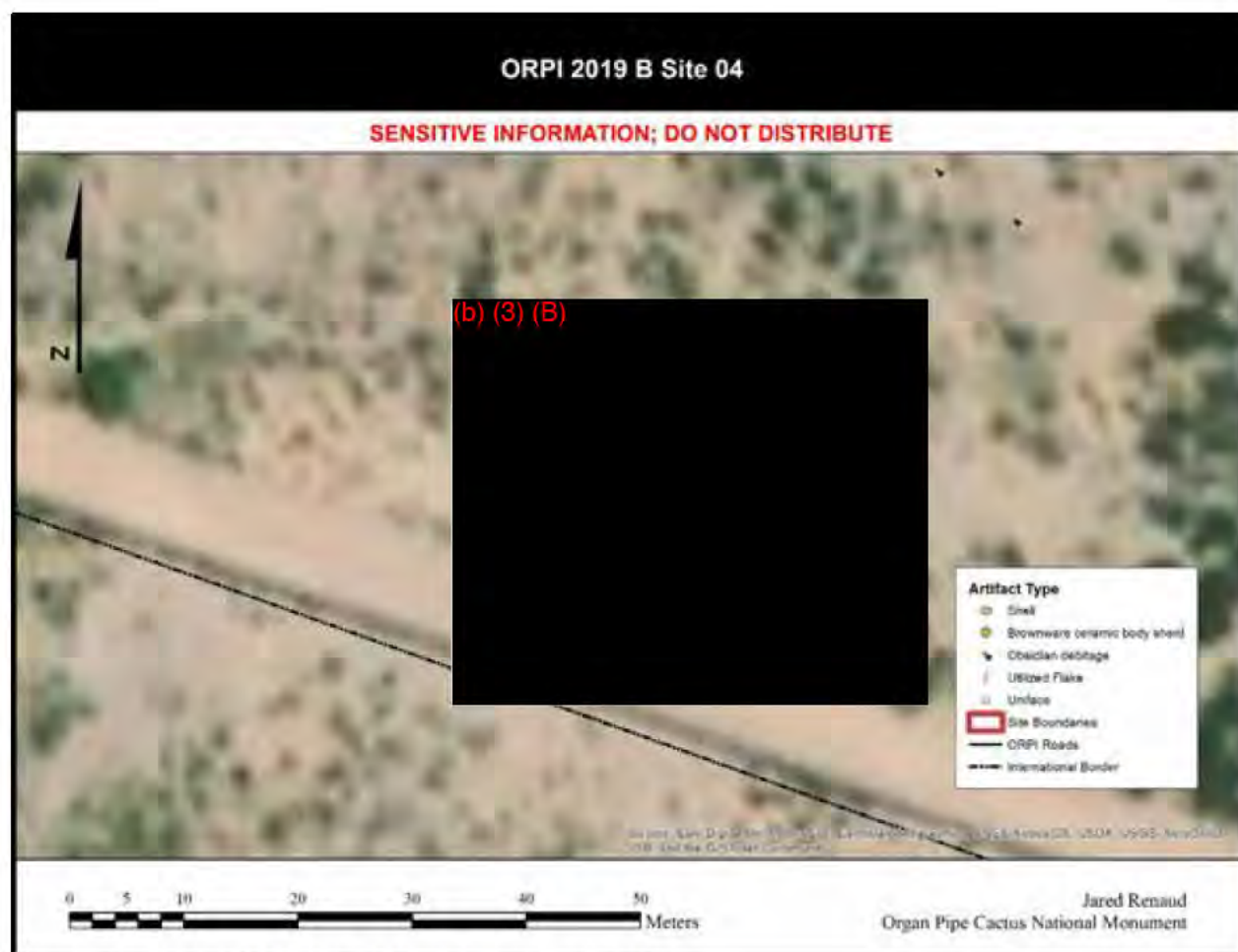


Figure 37. Map of ORPI 2019 B, Site 4 (by J. Renaud 2019).



Figure 38. ORPI 2019 B, Site 4, view to the north (photo by A. Veech).



Figure 39. ORPI 2019 B, Site 4, view to the north (photo by A. Veech).

While the artifacts contained within the currently demarcated boundaries of ORPI 2019 B, Site 4 are small in number ($n=9$), they nonetheless are diverse in variety and material type. The site assemblage includes 3 non-utilized flaked stone artifacts (2 chert, 1 rhyolite), 1 retouched obsidian flake, 1 non-diagnostic chert uniface, 2 brownware ceramic sherds, and 2 marine shell fragments (see Tables 13-15 and Appendix H, Figures 6-8). Other obsidian, marine shell, and ceramic artifacts noted (but not recorded) slightly north and upslope of the site's currently demarcated boundaries—outside the parameters of the June 2019 Roosevelt Reservation survey—imply that ORPI 2019 B, Site 4 is actually far larger in both size and complexity, warranting more rigorous examination and recording at some point in the future.

Table 13. Inventory of non-utilized flaked stone artifacts ($n=3$), ORPI 2019 B, Site 4 (by J. Renaud).

	Tested Cobble	Core	Primary Flake	Secondary Flake	Tertiary Flake	Debitage	Total
Material Type							
Chert					1	1	2
Rhyolite			1				1
Total			1		1	1	3

Table 14. Inventory of utilized flaked stone artifacts (n=2), ORPI 2019 B, Site 4 (by J. Renaud).

Artifact Number	Artifact Type	Material Type	Total
1	Retouched primary flake	obsidian	
2	Uniface	volcanic igneous rock	
			2

Table 15. Inventory of ceramics and marine shell (n=4), ORPI 2019 B, Site 4 (by J. Renaud).

	Body Sherd	Rim Sherd	Fragment	Total
Brownware	2			2
Redware				
Marine Shell			2	2
Total	2		1	4

Given its proximity to Aguajita Wash, Quitobaquito, and the Sonoyta River, it is quite conceivable that ORPI 2019 B, Site 4 is a campsite associated with the Salt Trail Corridor leading to the Gulf of California, perhaps one of either extended duration or episodic, short-term use. Its exotic obsidian and marine shell artifacts clearly indicate the transport or exchange of raw materials from the Gulf of California to points further north and east. Thus, the site holds potential for yielding information about precontact regional occupation, utilization, and trade patterns through time.

ORPI 2019 B, Site 5

ORPI 2019 B, Site 5 is a multicomponent surface artifact scatter that encompasses an area of 0.15 ha (0.37 ac) and is located approximately (b) (3) (B) of the (b) (3) (B) (b) (3) (B) west of the (b) (3) (B) of the park (b) (3) (B) west of ORPI 2019 B, Site 3, and (b) (3) (B) west of the (b) (3) (B) road (Figures 40-42, see Figure 26). Situated within the Sonoyta Valley, the site measures roughly 75 m (246.1 ft) (NW-SE) × 35 m (114.8 ft) (NE-SW) and is dispersed across the s(b) (3) (B) slope of a low-lying, (b) (3) (B) which is (b) (3) (B) drainages. Site vegetation includes bursage, grasses, a few mesquite trees, and several small saguaro. A fairly large, northeast-southwest-trending drainage lies approximately (b) (3) (B) west of the site, and another lies roughly (b) (3) (B) east of the site. The Sonoyta River is situated roughly (b) (3) (B) to the south-southwest.

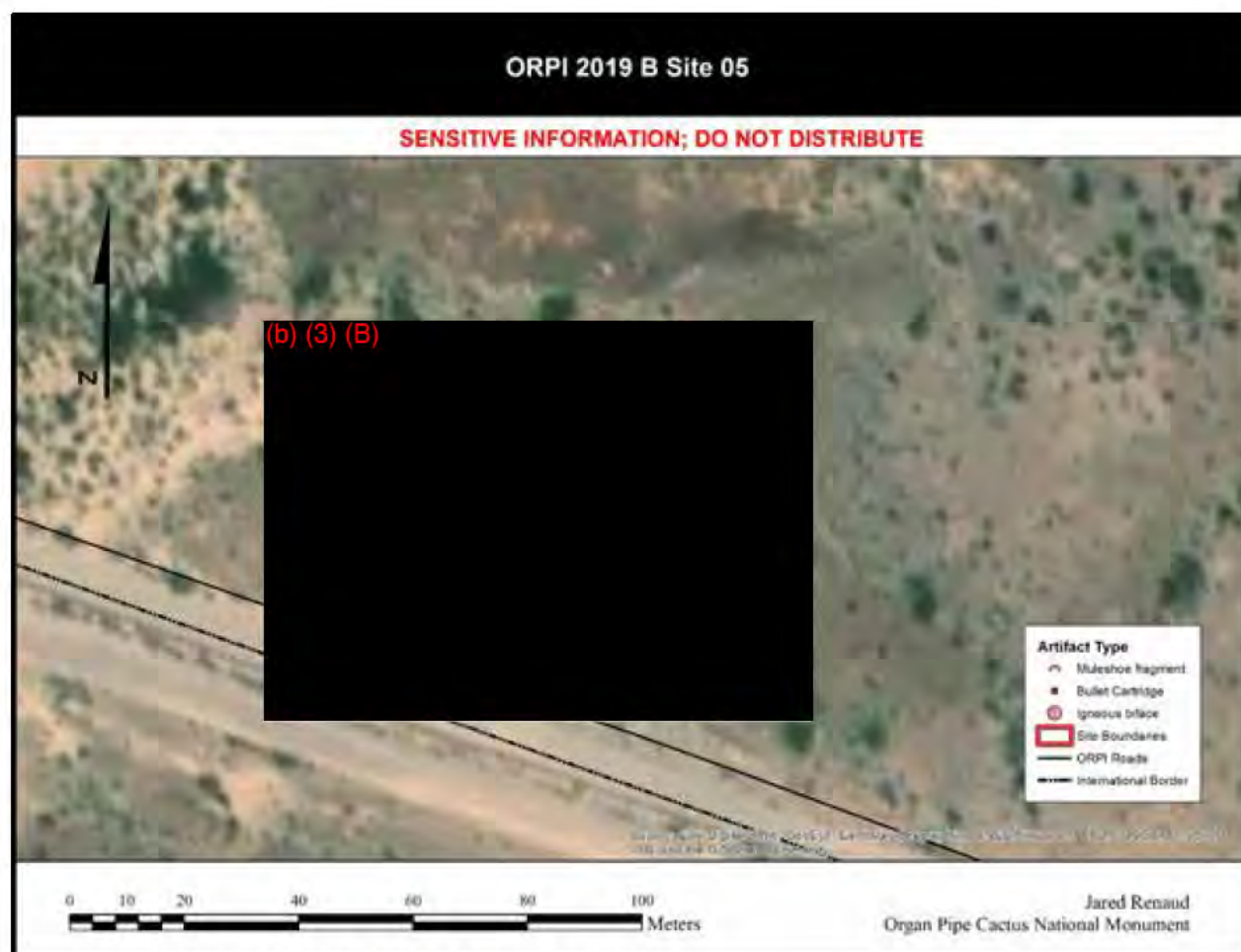


Figure 40. Map of ORPI 2019 B, Site 5 (by J. Renaud 2019).



Figure 41. ORPI 2019 B, Site 5, view to the north (photo by A. Veech).



Figure 42. ORPI 2019 B, Site 5, view to the south (photo by A. Veech).

A total of 71 artifacts were identified across ORPI 2019 B, Site 5, all but one of which are non-diagnostic, precontact Native American lithic artifacts. Of the 70 identified lithic artifacts, some 66 are non-utilized flaked stone items, including 2 tested cobbles, 2 cores, 31 primary flakes, 24 secondary flakes, 3 tertiary flakes, and 4 pieces of debitage. Lithic material types represented within this assemblage include volcanic igneous rock, chert, chalcedony, and basalt (see Table 16). The 4 additional lithic artifacts within the site exhibit modification and probable use, and these include 1 retouched basalt primary flake, 1 utilized chert flake, 1 volcanic igneous rock uniface, and 1 volcanic igneous rock bifacial preform (see Table 17 and Appendix H, Figure 10).

Table 16. Inventory of non-utilized flaked stone artifacts (n=66), ORPI 2019 B, Site 5 (by I. Rodriguez).

	Tested Cobble	Core	Primary Flake	Secondary Flake	Tertiary Flake	Debitage	Total
Material Type							
Chalcedony		1	16	9	2		28
Volcanic Igneous Rock			2			1	3
Basalt			2	1		1	4
Chert	2	1	11	14	1	2	31
Total	2	2	31	24	3	4	66

Table 17. Inventory of utilized flaked stone artifacts (n=2), ORPI 2019 B, Site 5 (by I. Rodriguez).

Artifact Number	Artifact Type	Material Type	Total
1	Retouched primary flake	basalt	
2	Utilized flake	chert	
3	Uniface	volcanic igneous rock	
4	Bifacial preform	volcanic igneous rock	
			4

The sole historic-period artifact identified within ORPI 2019 B, Site 5, situated within the site's southeast quadrant (see Figure 40), is a brass, .45-70 caliber rifle shell cartridge, measuring approximately 4 cm (1.57 in) in length and 1 cm (0.39 in) in diameter (see Appendix H, Figure 9). The base of this centerfire rifle cartridge shell is stamped with the abbreviation "WMC Govt," indicating that it was manufactured by the Winchester Munitions Company for the U.S. military (Jake DeGayner, personal communication 2019). The .45-70 rifle cartridge was adopted by the U.S. Army in 1873 as the service cartridge for its trap-door Springfield rifle. The Army continued to use the .45-70 cartridge until 1892, when it was replaced by the .30-40 caliber Krag cartridge (Van Zwoll 2009).

With the exception of the previously described .45-70 caliber rifle shell cartridge, it seems reasonable to classify ORPI 2019 B, Site 5 as a precontact Native American lithic procurement and processing site of indeterminate age. The site plausibly was used episodically by various individuals or groups, perhaps over a considerable period of time. Similar sites have been previously recorded elsewhere east of the Dos Lomitas, including ORPI 00425 (see pp. 26-28 of report).

VIII. Management Recommendations

Based on the information provided in Section VII of this report, recommendations for eligibility for listing on the NRHP are provided below, followed by recommendations for additional baseline Section 110 inventory work along ORPI's southern boundary.

Of the five (5) newly identified sites recorded during the June 2019 pedestrian survey along the southern boundary of ORPI, two presently are recommended as *eligible for listing in the NRHP*:

- ORPI 2019 B, Site 1 under Criterion D, as it possesses both integrity and the ability to yield important information about precontact occupation and utilization of the western Papaguería through time and about precontact trade patterns between the Gulf of California and the Gila Basin.
- ORPI 2019 B, Site 4 under Criterion D, as it also possesses both integrity and the ability to yield important information about precontact occupation and utilization of the western Papaguería through time and about precontact trade patterns between the Gulf of California and the Gila Basin.

As for the three (3) additional sites identified and recorded during the June 2019 survey (i.e., ORPI 2019 B, Sites 2, 3, and 5), additional, on-site, evaluation is required before a sound recommendation of NRHP eligibility can be proffered.

Finally, it is recommended that baseline Section 110 inventory of all presently unsurveyed (or under-surveyed) sections of ORPI's southern boundary be completed as soon as is possible, in light of impending border fence construction along the park's entire 48.3 km- (30 mi-) long southern boundary, entailing ground disturbance across the whole, 18.3 m- (60 ft-) wide Roosevelt Reservation. Without question, the roughly 2.75 km- (1.7 mi-) long section of the park's southern boundary extending west from Hocker Well warrants such systematic, baseline survey, as may other sections of the park's southern boundary, which have yet to be precisely determined. Such Section 110 inventory work can be readily accomplished by IMRAP archaeologists, SOAR archaeologists, and ORPI resources staff, in identical fashion to this present survey project.

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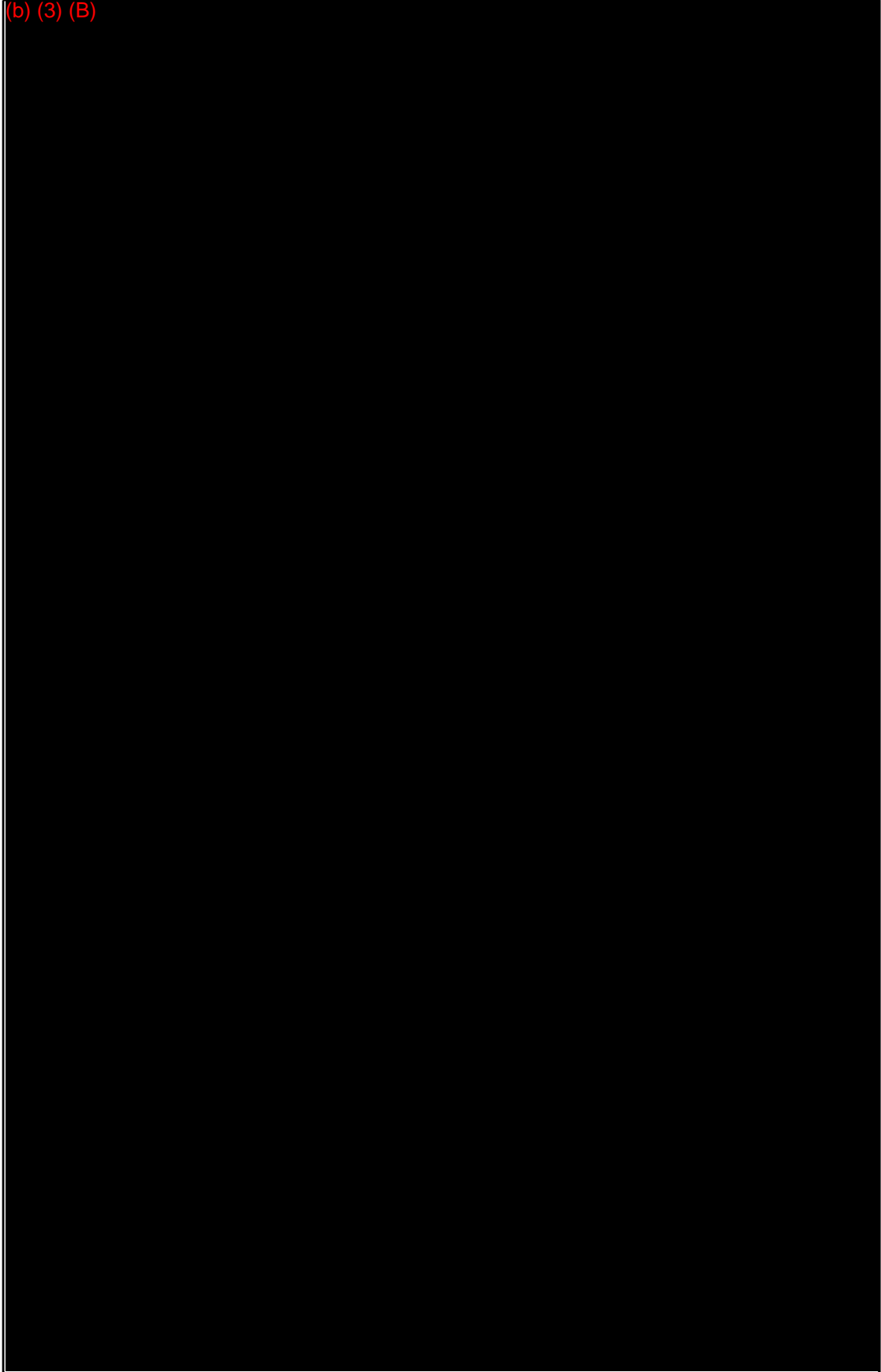
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Appendix A

Maps of Previously Surveyed Areas along the Southern Boundary of Organ Pipe Cactus National Monument

SENSITIVE INFORMATION DO NOT DISTRIBUTE

(b) (3) (B)



Appendix A, Figure 1. ORPI southern boundary map 1 of 5 (by I. Rodriguez 2019).

(b) (3) (B)



Appendix A, Figure 2. ORPI southern boundary map 2 of 5 (by I. Rodriguez 2019).

(b) (3) (B)



(b) (3) (B)



(b) (3) (B)

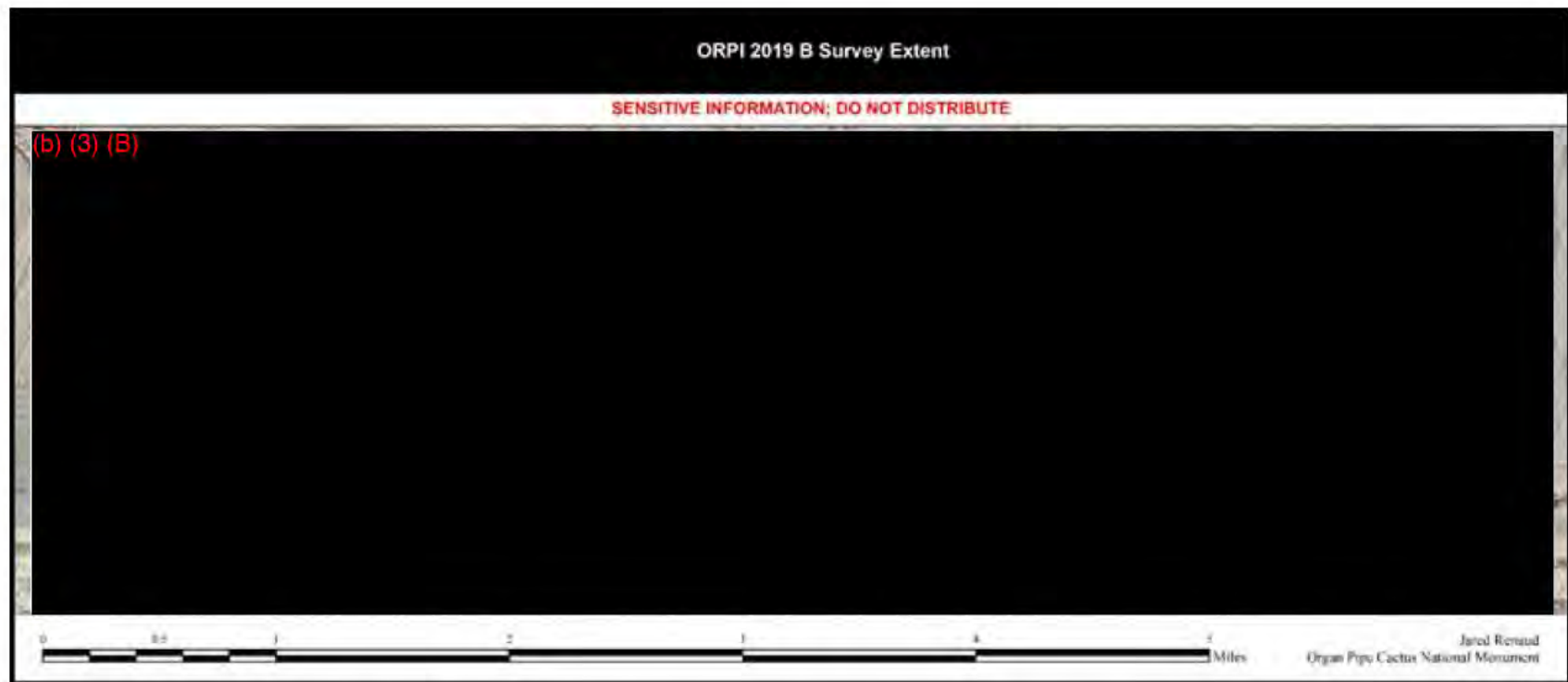


Appendix A., Figure 5. ORPI southern boundary map 5 of 5 (by I. Rodriguez 2019).

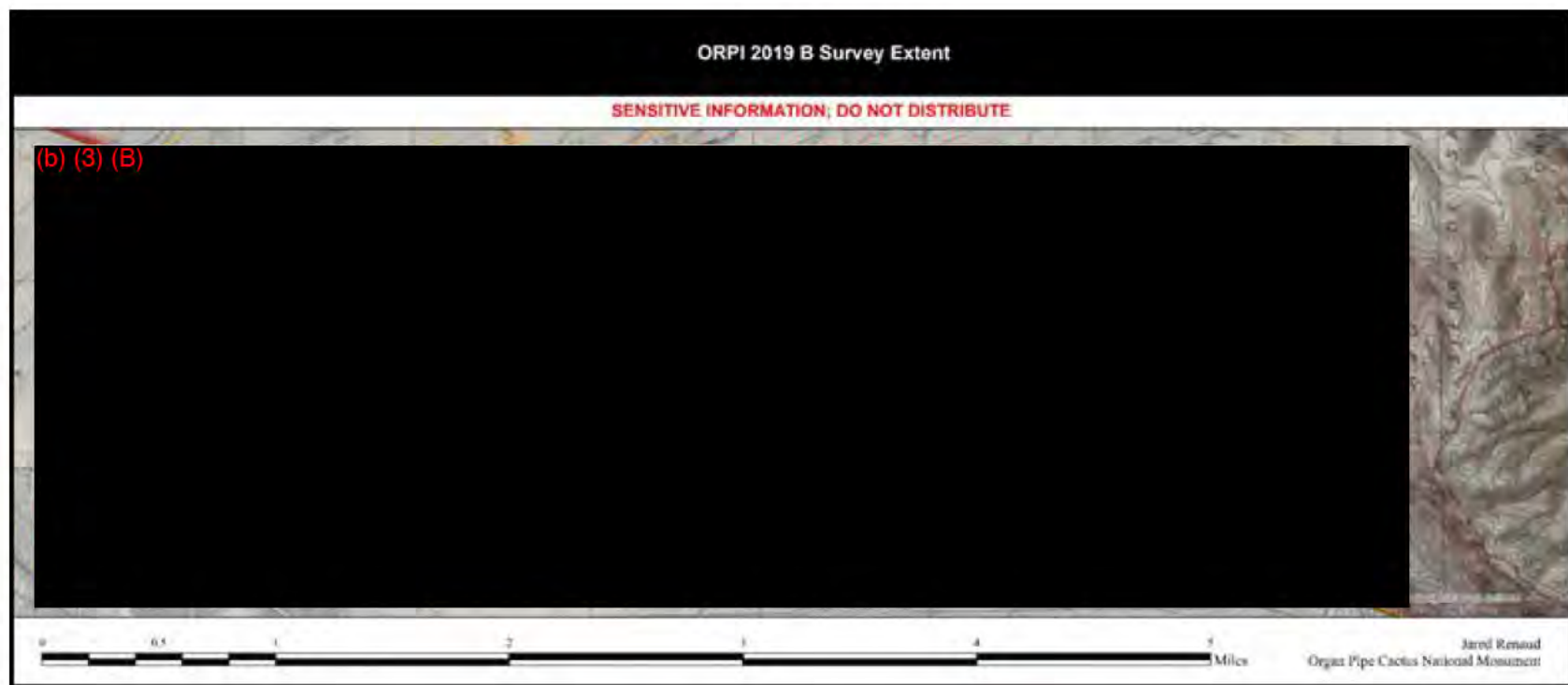
Appendix B

Maps of Areas Surveyed along the Southern Boundary of Organ Pipe Cactus National Monument during June 2019 Survey (ORPI 2019 B)

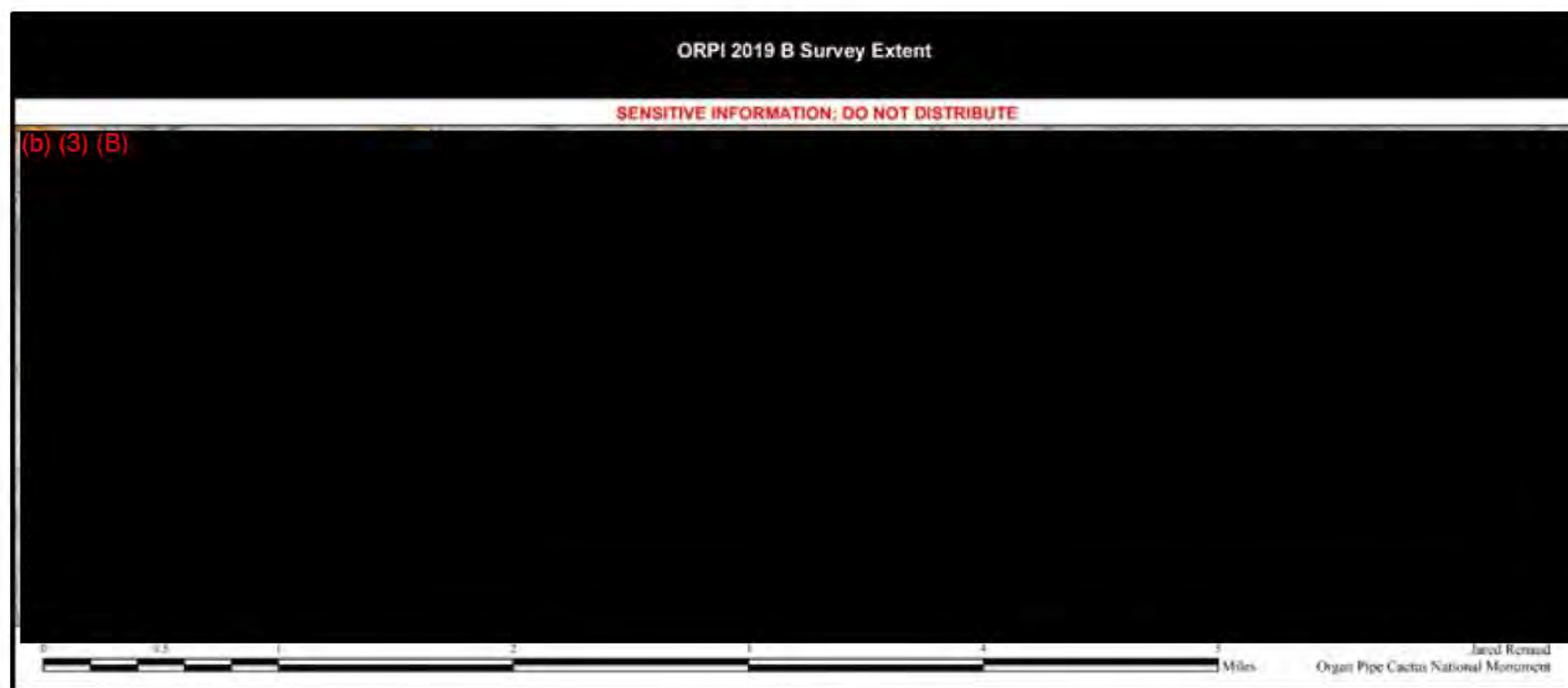
SENSITIVE INFORMATION DO NOT DISTRIBUTE



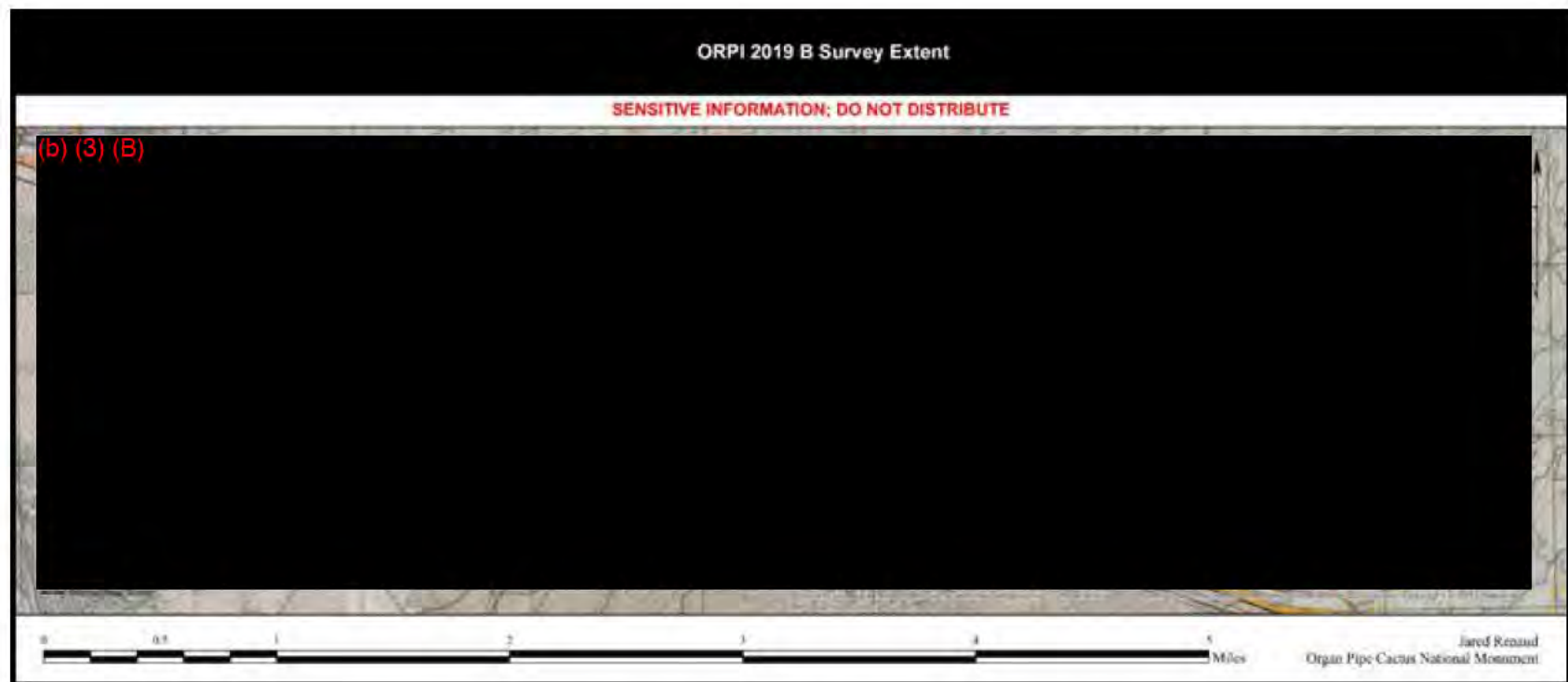
Appendix B, Figure 1. Map of ORPI transects surveyed immediately east and west of the Lukeville Port of Entry (by J. Renaud 2019).



Appendix B, Figure 2. Map of ORPI transects surveyed from the eastern terminus of (b) (3) (B) west toward the Dos Lomitas (by J. Renaud 2019).



Appendix B, Figure 3. Map of ORPI transects surveyed immediately east and west of the Dos Lomitas (by J. Renaud 2019).



Appendix B, Figure 4. Map of ORPI transects surveyed along West Fenceline Road west toward Aguajita Wash (by J. Renaud 2019).

Appendix C

Geospatial Coordinates of Isolated Occurrences (n=35) Identified during the June 2019
ORPI Southern Boundary Survey (ORPI 2019 B)

SENSITIVE INFORMATION DO NOT DISTRIBUTE

IO Number	Artifact Type	Material Type	Additional Remarks	UTM Easting	UTM Northing	Within Roosevelt Reservation (Y/N)
1	Marine mollusk shells (n=2)	shell	whole shells positioned 47 cm apart	(b) (3) (B)		N
2	Ceramic sherd (n=1)	redware	body sherd			N
3	Lithic debitage (n=1)	volcanic igneous rock				N
4	Secondary flake (n=1)	chert				Y
5	Primary flake (n=1)	basalt				Y
6	Secondary flakes (n=2)	chalcedony	positioned approx. 2 m apart			N
7	Utilized secondary flake (n=1)	volcanic igneous rock				N
8	Tobacco tin lid	tin	positioned approx. 1.5 m SW of IF 8			Y
9	Core (n=1)	volcanic igneous rock				N
10	Secondary flake (n=1)	chalcedony				N
11	Core (n=1)	chalcedony				N
12	Barbed wire spool	iron				Y
13	Primary flake (n=1)	basalt				Y
14	Core (n=1)	chalcedony				N
15	Secondary flake (n=1)	chalcedony				N
16	Biface (n=1)	chert	5×4×1 cm			N
17	Uniface (n=1)	chert	5×3.5×1 cm			N
18	Secondary flake (n=1)	chert				N
19	Lithic debitage (n=1)	volcanic igneous rock				N
20	Hammerstone (n=1)	volcanic igneous rock				N
21	Lithic debitage (n=1)	chalcedony				N
22	Secondary flake (n=1)	chalcedony				Y
23	Lithic debitage (n=1)	chalcedony				Y
24	Core (n=1)	chalcedony	7.5×5×4 cm			Y
25	Unifacially modified cobble tool (n=1)	volcanic igneous rock	12×8×5 cm			Y
26	Lithic debitage (n=1)	chert				Y

IO Number	Artifact Type	Material Type	Additional Remarks	UTM Easting	UTM Northing	Within Roosevelt Reservation (Y/N)
27	Secondary flake (n=1)	chert		(b) (3) (B)		Y
28	Marine shell fragments (n=3)	shell	positioned less than 70 cm apart			N
29	Retouched core (n=1)	chert				Y
30	Uniface (n=1)	chert				Y
31	Secondary flake (n=1)	chert				N
32	Primary flake (n=1)	obsidian				N
33	Bifacial thinning flake (n=1)	obsidian				N
34	Barbed wire spool	iron	associated barbed wire fragments			Y
35	Mule shoe fragment	iron				Y

(Geospatial information recorded and processed by J. DeGayer)

Appendix D

Selective Photos of Isolated Occurrences Identified during the June 2019
ORPI Southern Boundary Survey (ORPI 2019 B)



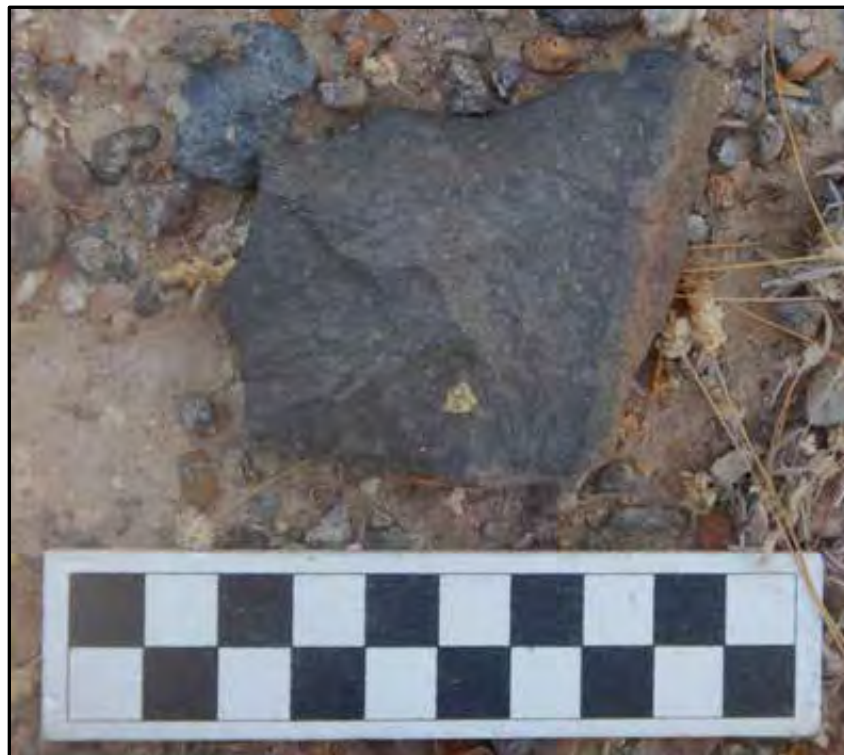
Appendix D, Figure 1. Isolated Occurrence 1, marine mollusk shell (photo by A. Veech).



Appendix D, Figure 2. Isolated Occurrence 2, redware ceramic body sherd (photo by A. Veech).



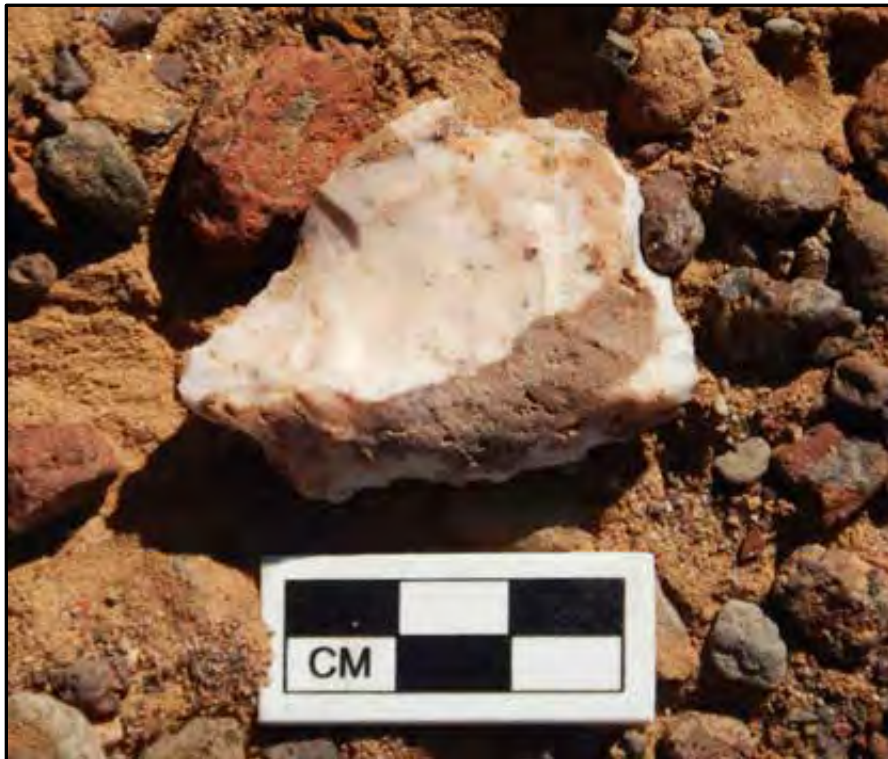
Appendix D, Figure 3. Isolated Occurrence 4, chert secondary flake (photo by A. Veech).



Appendix D, Figure 4. Isolated Occurrence 7, volcanic igneous rock utilized secondary flake (photo by A. Veech).



Appendix D, Figure 5. Isolated Occurrence 12, barbed wire spool (photo by A. Veech).



Appendix D, Figure 6. Isolated Occurrence 17, chert uniface (photo by A. Veech).



Appendix D, Figure 7. Isolated Occurrence 18, chert secondary flake (photo by A. Veech).



Appendix D, Figure 8. Isolated Occurrence 20, volcanic igneous rock hammerstone (photo by A. Veech).



Appendix D, Figure 9. Isolated Occurrence 25, volcanic igneous rock unifacially modified cobble tool (photo by A. Veech).



Appendix D, Figure 10. Isolated Occurrence 30, chert uniface (photo by A. Veech).



Appendix D, Figure 11. Isolated Occurrence 32, obsidian primary flake (photo by A. Veech).



Appendix D, Figure 12. Isolated Occurrence 33, obsidian bifacial thinning flake (photo by A. Veech).



Appendix D, Figure 13. Isolated Occurrence 35, mule shoe fragment (photo by A. Veech).

Appendix E

Geospatial Coordinates of Isolated Features (n=20) Identified during the June 2019
ORPI Southern Boundary Survey (ORPI 2019 B)

SENSITIVE INFORMATION DO NOT DISTRIBUTE

IF Number	Feature Type	Material Type	Additional Remarks	UTM Easting	UTM Northing	Within Roosevelt Reservation (Y/N)
1	Historic hearth	Volcanic igneous cobbles (n=17)	approx. 100 cm (E-W) × 75 cm (N-S)	(b) (3) (B)		Y
2	Recent hearth/rock ring	Volcanic igneous cobbles (n=11)	approx. 85 cm (E-W) × 75 cm (N-S)			N
3	Rock ring	Volcanic igneous cobbles (n=9)	54 cm in diameter, possibly associated w/ historic road trace 30 m N			N
4	Cobble cluster	Volcanic igneous cobbles (n=6)	60 × 50 cm, possibly associated w/ historic road trace 30 m N			N
5	Cobble pile	Vesicular basalt and volcanic igneous cobbles (n=8)	36 cm (N-S) × 33 cm (E-W) × 20 cm (height)			N
6	Boulder ring/possible sleeping circle	Vesicular basalt and volcanic igneous boulders and cobbles (n≥18)	225 cm (N-S) × 150 cm (E-W)			N
7	Boulder pile	Vesicular basalt and volcanic igneous boulders (n=4)	approx. 50 cm (N-S) × 50 cm (E-W) × 32.5 cm (height)			N
8	USGS benchmark	Brass/bronze	associated wooden stake debris			Y
9	Low-density surface lithic scatter	Chalcedony and basalt flakes and debitage (n=15)	approx. 23 m in diameter/ 0.03 ac in size			Y
10	Low-density surface lithic scatter	Chert, volcanic igneous, and rhyolite tools, flakes, and debitage (n=9)	approx. 30 m in diameter/0.09 ac in size			Y
11	Low-density surface lithic scatter	Chert and chalcedony tools, flakes, and debitage (n=12) and volcanic igneous mano frag (n=1)	0.09 ac in size			Y
12	Low-density surface lithic scatter	Chalcedony flakes and debitage (n=9) and core (n=1)	0.06 ac in size			N
13	Low-density surface lithic scatter	Chalcedony, chert, and basalt flakes (n=9) and core (n=1)	approx. 30 m in diameter/0.05 ac in size			N

IF Number	Feature Type	Material Type	Additional Remarks	UTM Easting	UTM Northing	Within Roosevelt Reservation (Y/N)
14	Possible thermal feature	Vesicular basalt and volcanic igneous cobbles (n≈50)	approx. 155 cm (N-S) × 137 cm (E-W)	(b) (3) (B)		Y
15	Low-density surface lithic scatter	Chalcedony, chert, and basalt flakes and debitage (n=6) and core (n=1)	approx. 25 m in diameter/0.06 ac in size			Y
16	Low-density surface lithic scatter	Chalcedony, chert, and basalt flakes and debitage (n=12); basalt core (n=1); basalt biface (n=1); and volcanic igneous rock utilized flake	29 m in diameter/0.08 ac in size			Y
17	Low-density surface lithic scatter	Chalcedony, chert, rhyolite, and volcanic igneous rock flakes and debitage (n=11)	0.09 ac in size			Y
18	Low-density surface lithic scatter	Rhyolite and chert flakes (n=4)	approx. 10 m in diameter/0.01 ac in size			Y
19	USGS benchmark	brass/bronze	atop summit of Monument Hill			N
20	USGS benchmark	brass/bronze				Y

(Geospatial information recorded and processed by J. DeGayer)

Appendix F

Selective Photos of Isolated Features Identified during the June 2019
ORPI Southern Boundary Survey (ORPI 2019 B)



Appendix F, Figure 1. Isolated Feature 1, historic-period hearth, view to the south (photo by A. Veech).



Appendix F, Figure 2. Isolated Feature 6, possible sleeping circle, view to the west (photo by A. Veech).



Appendix F, Figure 3. Isolated Feature 8, USGS benchmark and associated wooden stake debris, view to the north (photo by A. Veech).



Appendix F, Figure 4. Isolated Feature 14, possible thermal feature, view to the south (photo by A. Veech).

Appendix G

Geospatial Coordinates of Archaeological Sites (n=5) Identified during the June 2019
ORPI Southern Boundary Survey (ORPI 2019 B)

SENSITIVE INFORMATION DO NOT DISTRIBUTE

Site Number	Site Type	Recorded Size	Additional Remarks	UTM Centroid Easting	UTM Centroid Northing	Square Meters Within Roosevelt Reservation	NRHP Eligible (Y/N)
ORPI 2019 B, Site 1	precontact Native American artifact scatter	0.19 ha (0.47 ac)	Site artifacts include flaked obsidian, chalcedony, basalt, chert, and volcanic igneous rock; vesicular basalt and volcanic igneous rock groundstone; a volcanic igneous rock hammerstone; brownware and redware ceramic sherds; and marine shell fragments.	(b) (3) (B)		0	Y
ORPI 2019 B, Site 2	precontact Native American artifact scatter	0.02 ha (0.05 ac)	Site artifacts include flaked chalcedony, basalt, chert, and volcanic igneous rock; and brownware and redware ceramic sherds.			0	N
ORPI 2019 B, Site 3	precontact Native American lithic scatter	0.13 ha (0.31 ac)	Site artifacts include flaked chalcedony, rhyolite, chert, volcanic igneous rock, and basalt.			209	N
ORPI 2019 B, Site 4	precontact Native American artifact scatter	0.02 ha (0.05 ac)	Site artifacts include flaked obsidian, chert, and rhyolite; brownware ceramic sherds; and a marine shell fragment.			173	Y
ORPI 2019 B, Site 5	multicomponent artifact scatter	0.15 ha (0.37 ac)	Site artifacts include flaked volcanic igneous rock, basalt, chert, chalcedony, and rhyolite; and a .45-70 caliber rifle shell casing.			0	N

(Geospatial information recorded and processed by J. DeGaye)

Appendix H

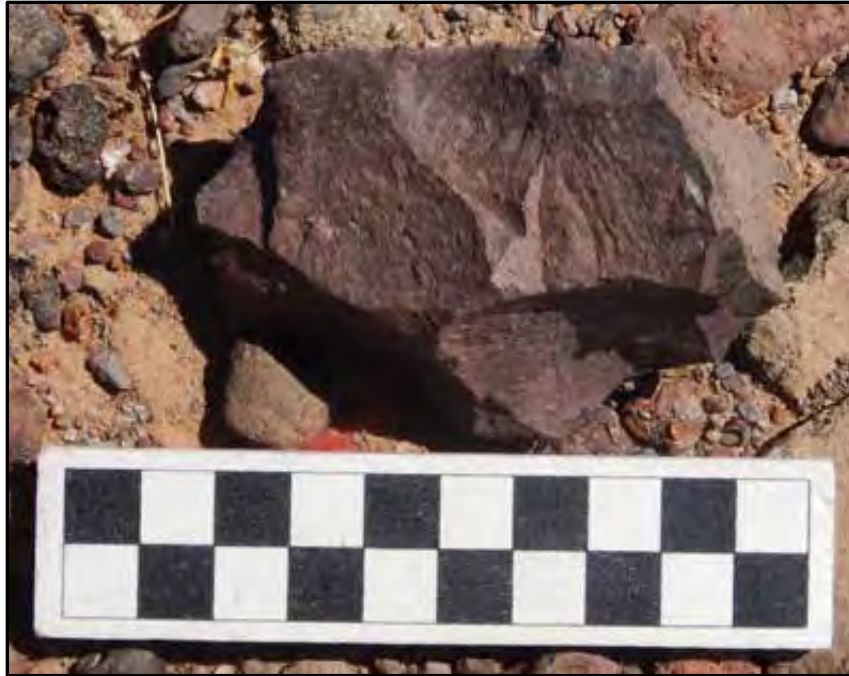
Selective Photos of ORPI 2019 B Site Artifacts



Appendix H, Figure 1. Volcanic igneous rock utilized secondary flake, ORPI 2019 B, Site 2 (photo by A. Veech).



Appendix H, Figure 2. Basalt utilized secondary flake, ORPI 2019 B, Site 2 (photo by A. Veech).



Appendix H, Figure 3. Volcanic igneous rock flake bifacial preform, ORPI 2019 B, Site 3 (photo by A. Veech).



Appendix H, Figure 4. Chert uniface, ORPI 2019 B, Site 3 (photo by A. Veech).



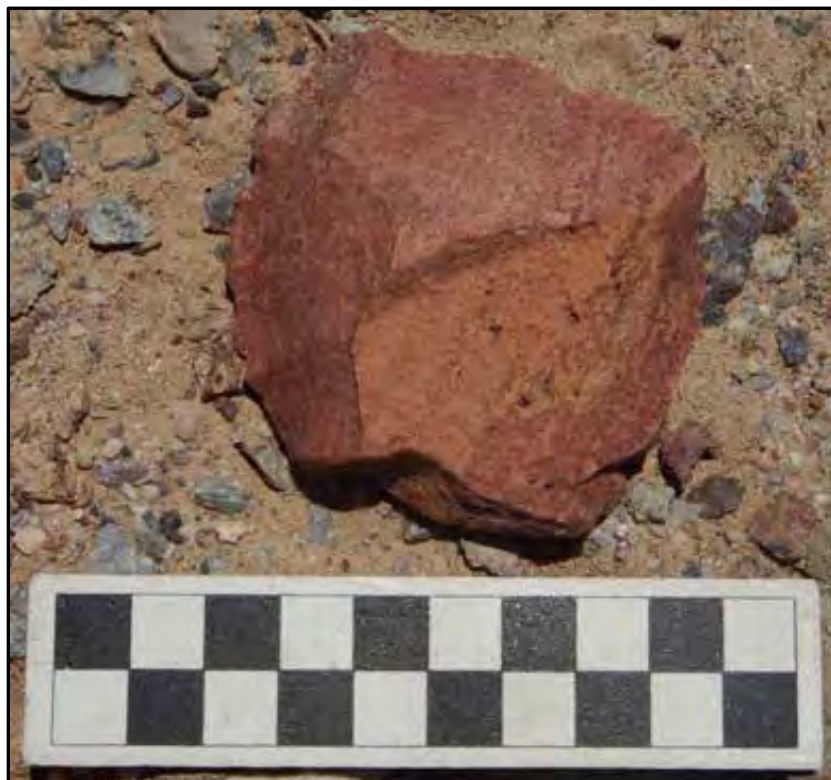
Appendix H, Figure 5. Basalt utilized secondary flake, ORPI 2019 B, Site 3 (photo by A. Veech).



Appendix H, Figure 6. Marine shell fragments, ORPI 2019 B, Site 4 (photo by A. Veech).



Appendix H, Figure 7. Obsidian retouched primary flake, ORPI 2019 B, Site 4 (photo by A. Veech).



Appendix H, Figure 8. Volcanic igneous rock uniface, ORPI 2019 B, Site 4 (photo by A. Veech).



Appendix H, Figure 9. .45-70 rifle cartridge shell, ORPI 2019 B, Site 5 (photo by A. Veech).



Appendix H, Figure 10. Volcanic igneous rock bifacial preform, ORPI 2019 B, Site 5 (photo by A. Veech).

Appendix I

Arizona State Museum (ASM) Site Cards for ORPI 2019 B, Sites 1, 2, 3, 4, and 5

SENSITIVE INFORMATION DO NOT DISTRIBUTE

ARIZONA STATE MUSEUM ARCHAEOLOGICAL SITE CARD										Side A	
Field No: ORPI 2019 B, Site 1					Nat'l. Reg. Opinion: Recommended Eligible						
Recorders: A. Veech, J. Renaud, J. DeGayner, I. Rodriguez, S. Hart											
Recording Organization: National Park Service					Date Recorded: 06/24/2019						
Project Name: Archaeological Survey of 18.2 Kilometers (11.3 Miles) of the U.S. Mexico International Border, Organ Pipe Cactus National Monument, Pima County, Arizona (Project No. ORPI 2019 B)											
Site Name: ORPI 2019 B, Site 1											
Land status (check one): PVT <input type="checkbox"/> CTY <input type="checkbox"/> CO <input type="checkbox"/> ST <input type="checkbox"/> TRIB <input type="checkbox"/> USFS <input type="checkbox"/> USFW <input type="checkbox"/> NPS <input checked="" type="checkbox"/> BLM <input type="checkbox"/> DOD <input type="checkbox"/> ACE <input type="checkbox"/> BOR <input type="checkbox"/> RTC <input type="checkbox"/>											
Owner/Agency name: Organ Pipe Cactus National Monument											
Survey Colls: Y <input type="checkbox"/> N <input checked="" type="checkbox"/> Repository Institute: N/A											
Report Reference: National Park Service, Intermountain Region Archaeology Project No. 2019 B											
Mapname USGS:		(b) (3) (B)		Series: (b) (3) (B)		State: AZ		County: Pima		Elev: _____ ft	
Site Size:		in Ft _____ or M <input checked="" type="checkbox"/>		Length: 85		Width: 38					
How measured:		EST <input type="checkbox"/> PACE <input type="checkbox"/>		GPS <input checked="" type="checkbox"/>		MAP <input type="checkbox"/>		TAPE <input type="checkbox"/>			
				BL <input type="checkbox"/>		TWN <input type="checkbox"/>		RNG <input type="checkbox"/>		SEC <input type="checkbox"/>	
										SUBDIVISION <input type="checkbox"/>	
cntr UTM		Z 12 E		(b) (3) (B)							
peri UTM		Z _____ E		N							
peri UTM		Z _____ E		N							
peri UTM		Z _____ E		N							
peri UTM		Z _____ E		N							
How were UTM's derived: USGS Map <input type="checkbox"/> GPS <input checked="" type="checkbox"/>											
<p>Site Description/Remarks:</p> <p>ORPI 2019 B, Site 1 is a precontact Native American (b) (5). artifact scatter measuring 0.19 ha (0.47 ac) in size that is located approximately (b) (3) (B) of the Lukeville Port of Entry, (b) (3) (B) west of the (b) (3) (B) of the park, and (b) (3) (B) west of the (b) (3) (B). The site extends roughly 85 m (279 ft) (N-S) x 38 m (125 ft) (E-W) across the broad alluvial flats of the Sonoyta Valley. Site vegetation consists predominately of creosote, bursage, and saltbrush. A (b) (3) (B) drainage lies approximately (b) (3) (B) west of the site, while another (b) (3) (B) drainage lies roughly (b) (3) (B) east of the site. The Sonoyta River lies roughly (b) (3) (B) to the south.</p> <p>A total of 116 artifacts were identified across ORPI 2019 B, Site 1, including 55 non-utilized flaked stone artifacts, 2 ground stone fragments, 1 hammerstone, 2 pieces of fire-cracked rock, 51 plain, undecorated ceramic sherds, and 5 marine shell fragments. Lithic material types within the site assemblage include volcanic igneous rock, chert, chalcedony, basalt, and obsidian. None of the site lithic artifacts, however, are diagnostic. Site ceramic sherds denote a post-Archaic (post 300 CE) occupation, likely during the Hohokam Classic period (1150-1400 CE).</p> <p>Given its proximity to the Sonoyta River and the density and variety of its artifacts, ORPI 2019 B, Site 1 likely is an encampment that was occupied either over a single, extended period of time or over multiple, episodic ones. It may be associated and contemporaneous with the dense concentration of seasonal occupation sites located (b) (5), (b) (2). Thus, the site holds potential for yielding information about precontact regional occupation, utilization, and trade patterns through time.</p>											
Agency Site: _____ Agency Proj. No: _____ National Reg Rec: _____ ASM Site No: _____				Additional Documentation type _____ document location _____ in _____ in _____ in _____				ASM Proj No: _____ ASM Permit No: _____			
ASM USE ONLY: _____ Class: _____				Within AZ: _____ (ASM) Contains AZ: _____ (ASM)				Corrections: _____			
QP _____ Biblio Ref: _____				Plotted / / by _____							
QP _____ Acc.No: _____				AZSITE DE / / by _____							

AZ

ARIZONA STATE MUSEUM ARCHAEOLOGICAL SITE CARD

ASM Site Card Rev. 12/3/93

Appendix I, Figure 1a. ASM Site Card for ORPI 2019 B, Site 1, pp. 1 of 2.

ARIZONA STATE MUSEUM ARCHAEOLOGICAL SITE CARD

Depositional Context: (choose as many as apply)

<input type="checkbox"/> (1) Open, no depth	<input type="checkbox"/> (5) Rockshelter, no depth	<input type="checkbox"/> (8) Cave, no depth
<input type="checkbox"/> (2) Open, depth	<input type="checkbox"/> (6) Rockshelter, depth	<input type="checkbox"/> (9) Cave, depth
<input checked="" type="checkbox"/> (3) Open, depth unknown	<input type="checkbox"/> (7) Rockshelter, depth unknown	<input type="checkbox"/> (10) Cave, depth unknown
<input type="checkbox"/> (4) Open, exposed only in profile		

Topo. Setting: broad alluvial flats of the Sonoyta Valley

Vegetation: creosote, bursage, and saltbrush

Geology/soils: Gilman very fine sandy loam (saline); Gunsight very gravelly loam, 2 to 15 percent slopes

Site Condition: Good

Site Type (choose one) ☒ (a) Artifact Scatter (No other features visible on the surface)

☐ (b) Features with associated artifacts ☐ (c) Features with NO associated artifacts

Assemblage Composition (Indicate quantities as counts, estimated ranges, "P" for types known only to be present, "0" for types not seen at the site.)

<u>51</u> Prehistoric Ceramic	<u>2</u> FCR	<u> </u> Glass	<u> </u> Animal remains/artifacts
<u>55</u> Chipped Stone	<u>5</u> Shell	<u> </u> Metal	<u> </u> Plant remains/artifacts
<u>2</u> Groundstone	<u> </u> Historic Ceramic	<u> </u> Historic Wood	<u> </u> Human remains

Diagnostics (indicate quantity of cultural/temporal/functional types as counts, estimates, or "P")

<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>

Assemblage Remarks: Site ceramic sherds denote a post-Archaic (post 300 CE) occupation, likely during the Hohokam Classic period (1150-1400 CE). Exotic obsidian and marine shell artifacts clearly indicate the transport or exchange of raw materials from the Gulf of California to points further north and east.

Side C

AZ

ARIZONA STATE MUSEUM ARCHAEOLOGICAL SITE CARD

Feature Data: (Complete one feature record for each type of feature recorded for this site.)

Feature No. 1	Count	Use	Culture	Age	Period/Phase
Name					
Feature 1 Remark:					

Feature No. 2	Count	Use	Culture	Age	Period/Phase
Name					
Feature 2 Remarks:					

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Appendix I, Figure 1b. ASM Site Card for ORPI 2019 B, Site 1, pp. 2 of 2.

ARIZONA STATE MUSEUM ARCHAEOLOGICAL SITE CARD

Depositional Context: (choose as many as apply):

<input type="checkbox"/> (1) Open, no depth	<input type="checkbox"/> (5) Rockshelter, no depth	<input type="checkbox"/> (8) Cave, no depth
<input type="checkbox"/> (2) Open, depth	<input type="checkbox"/> (6) Rockshelter, depth	<input type="checkbox"/> (9) Cave, depth
<input checked="" type="checkbox"/> (3) Open, depth unknown	<input type="checkbox"/> (7) Rockshelter, depth unknown	<input type="checkbox"/> (10) Cave, depth unknown
<input type="checkbox"/> (4) Open, exposed only in profile		

Topo. Setting: broad alluvial flats of the Sonoyta Valley

Vegetation: creosote, bursage, and salt brush

Geology/soils: Gilman very fine sandy loam (saline); Gunsight very gravelly loam, 2 to 15 percent slopes

Site Condition: Good

AZ

ARIZONA STATE MUSEUM ARCHAEOLOGICAL SITE CARD

Site Type (choose one): ☒ (a) Artifact Scatter (No other features visible on the surface)

☐ (b) Features with associated artifacts ☐ (c) Features with NO associated artifacts

Assemblage Composition (indicate quantities as counts, estimated ranges, "P" for types known only to be present, "0" for types not seen at the site.)

22	Prehistoric Ceramic	<input type="checkbox"/> FCR	<input type="checkbox"/> Glass	<input type="checkbox"/> Animal remains/artifacts
34	Chipped Stone	<input type="checkbox"/> Shell	<input type="checkbox"/> Metal	<input type="checkbox"/> Plant remains/artifacts
	Groundstone	<input type="checkbox"/> Historic Ceramic	<input type="checkbox"/> Historic Wood	<input type="checkbox"/> Human remains

Diagnostics (indicate quantity of cultural/temporal/functional types as counts, estimates, or "P")

Assemblage Remarks: Site ceramic sherds denote a post-Archaic (post 300 CE) occupation, likely during the Hohokam Classic period (1150-1400 CE).

Feature Data: (Complete one feature record for each type of feature recorded for this site.)

Feature No. 1 Name	Count	Use	Culture	Age	Period/Phase
Feature 1 Remark:					

Feature No. 2 Name	Count	Use	Culture	Age	Period/Phase
Feature 2 Remarks:					

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Appendix I, Figure 2b. ASM Site Card for ORPI 2019 B, Site 2, pp. 2 of 2.

ARIZONA STATE MUSEUM ARCHAEOLOGICAL SITE CARD

Depositional Context: (choose as many as apply)

<input type="checkbox"/> (1) Open, no depth	<input type="checkbox"/> (5) Rockshelter, no depth	<input type="checkbox"/> (8) Cave, no depth
<input type="checkbox"/> (2) Open, depth	<input type="checkbox"/> (6) Rockshelter, depth	<input type="checkbox"/> (9) Cave, depth
<input checked="" type="checkbox"/> (3) Open, depth unknown	<input type="checkbox"/> (7) Rockshelter, depth unknown	<input type="checkbox"/> (10) Cave, depth unknown
<input type="checkbox"/> (4) Open, exposed only in profile		

Topo. Setting: broad alluvial flats of the Sonoyta Valley

Vegetation: an understory of creosote bushes, punctuated by several chain fruit cholla

Geology/soils: Gilman very fine sandy loam (saline); Gunsight very gravelly loam, 2 to 15 percent slopes

Site Condition: Good

Site Type (choose one) ☐ (a) Artifact Scatter (No other features visible on the surface)
☒ (b) Features with associated artifacts ☐ (c) Features with NO associated artifacts

Assemblage Composition (indicate quantities as counts, estimated ranges, "P" for types known only to be present, "0" for types not seen at the site.)

<input type="checkbox"/> Prehistoric Ceramic	<input type="checkbox"/> FCR	<input type="checkbox"/> Glass	<input type="checkbox"/> Animal remains/artifacts
<input type="checkbox"/> Chipped Stone	<input type="checkbox"/> Shell	<input type="checkbox"/> Metal	<input type="checkbox"/> Plant remains/artifacts
<input type="checkbox"/> Groundstone	<input type="checkbox"/> Historic Ceramic	<input type="checkbox"/> Historic Wood	<input type="checkbox"/> Human remains

Diagnostics (indicate quantity of cultural/temporal/functional types as counts, estimates, or "P")

Assemblage Remarks: The absence of ceramics within the assemblage suggests that ORPI 2019 B, Site 3 may date to the Archaic period (8,500 BCE – 300 CE).

Feature Data: (Complete one feature record for each type of feature recorded for this site.)

Feature No. 1

Name	Count	Use	Culture	Age	Period/Phase
Feature 1	1	Unknown	Unknown	Unknown	Archaic period?

Feature 1 Remark: Feature 1 is a small cobble cluster of only a single course in height and of indeterminate function. This cluster measures approximately 65 cm (25.6 in) (N-S) × 46 cm (18.1 in) (E-W) × 9 cm (3.5 in) (height). At least 15 volcanic igneous rock and vesicular basalt cobbles comprise the cluster, ranging in size between 27×20×9 cm (10.6×7.9×3.5 in) and 7×6×4 cm (2.8×2.4×1.6 in).

Feature No. 2

Name	Count	Use	Culture	Age	Period/Phase
Feature 2 Remarks:					

Side C

ARIZONA STATE MUSEUM ARCHAEOLOGICAL SITE CARD

AZ

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Appendix I, Figure 3b. ASM Site Card for ORPI 2019 B, Site 3, pp. 2 of 2.

ARIZONA STATE MUSEUM ARCHAEOLOGICAL SITE CARD

Side C

AZ

Depositional Context: (choose as many as apply):

<input type="checkbox"/> (1) Open, no depth	<input type="checkbox"/> (5) Rockshelter, no depth	<input type="checkbox"/> (8) Cave, no depth
<input type="checkbox"/> (2) Open, depth	<input type="checkbox"/> (6) Rockshelter, depth	<input type="checkbox"/> (9) Cave, depth
<input checked="" type="checkbox"/> (3) Open, depth unknown	<input type="checkbox"/> (7) Rockshelter, depth unknown	<input type="checkbox"/> (10) Cave, depth unknown
<input type="checkbox"/> (4) Open, exposed only in profile		

Topo. Setting: The site lies against the southern flank of a low-lying, east-west-trending hill within the La Abra Plain.

Vegetation: Site vegetation consists predominately of bursage and saltbrush, interspersed with occasional chain fruit cholla and saguaro.

Geology/soils: Harqua-Gunsight complex; Lomitas very stony loam, 8 to 40 percent slopes

Site Condition: Good

Site Type (choose one) ☒ (a) Artifact Scatter (No other features visible on the surface)
☐ (b) Features with associated artifacts ☐ (c) Features with NO associated artifacts

Assemblage Composition (indicate quantities as counts, estimated ranges, "P" for types known only to be present, "D" for types not seen at the site.)

<input type="checkbox"/> 2 Prehistoric Ceramic	<input type="checkbox"/> FCR	<input type="checkbox"/> Glass	<input type="checkbox"/> Animal remains/artifacts
<input type="checkbox"/> 5 Chipped Stone	<input type="checkbox"/> 2 Shell	<input type="checkbox"/> Metal	<input type="checkbox"/> Plant remains/artifacts
<input type="checkbox"/> Groundstone	<input type="checkbox"/> Historic Ceramic	<input type="checkbox"/> Historic Wood	<input type="checkbox"/> Human remains

Diagnostics (indicate quantity of cultural/temporal/functional types as counts, estimates, or "P")

Assemblage Remarks: Site ceramic sherds denote a post-Archaic (post 300 CE) occupation, likely during the Hohokam Classic period (1150-1400 CE). Exotic obsidian and marine shell artifacts clearly indicate the transport or exchange of raw materials from the Gulf of California to points further north and east.

Feature Data: (Complete one feature record for each type of feature recorded for this site.)

Feature No. 1 Name	Count	Use	Culture	Age	Period/Phase
Feature 1 Remark:					

Feature No. 2 Name	Count	Use	Culture	Age	Period/Phase
Feature 2 Remarks:					

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Appendix I, Figure 4b. ASM Site Card for ORPI 2019 B, Site 4, pp. 2 of 2.

ARIZONA STATE MUSEUM ARCHAEOLOGICAL SITE CARD						Side C
Depositional Context: (choose as many as apply)						
<input type="checkbox"/> (1) Open, no depth	<input type="checkbox"/> (5) Rockshelter, no depth	<input type="checkbox"/> (8) Cave, no depth				
<input type="checkbox"/> (2) Open, depth	<input type="checkbox"/> (6) Rockshelter, depth	<input type="checkbox"/> (9) Cave, depth				
<input checked="" type="checkbox"/> (3) Open, depth unknown	<input type="checkbox"/> (7) Rockshelter, depth unknown	<input type="checkbox"/> (10) Cave, depth unknown				
<input type="checkbox"/> (4) Open, exposed only in profile						
Topo. Setting: The site is dispersed across the south-facing slope of a low-lying, cobble-strewn interfluvium which is bracketed by two small, east-west-trending drainages.						
Vegetation: Site vegetation includes bursage, grasses, a few mesquite trees, and several small saguaro.						
Geology/soils: Gilman very fine sandy loam (saline); Gunsight very gravelly loam, 2 to 15 percent slopes						
Site Condition: Good						
Site Type (choose one) <input checked="" type="checkbox"/> (a) Artifact Scatter (No other features visible on the surface)						
<input type="checkbox"/> (b) Features with associated artifacts <input type="checkbox"/> (c) Features with NO associated artifacts						
Assemblage Composition (Indicate quantities as counts, estimated ranges, "P" for types known only to be present, "0" for types not seen at the site.)						
<input type="checkbox"/> Prehistoric Ceramic	<input type="checkbox"/> FCR	<input type="checkbox"/> Glass	<input type="checkbox"/> Animal remains/artifacts			
<input type="checkbox"/> Chipped Stone	<input type="checkbox"/> Shell	<input type="checkbox"/> Metal	<input type="checkbox"/> Plant remains/artifacts			
<input type="checkbox"/> Groundstone	<input type="checkbox"/> Historic Ceramic	<input type="checkbox"/> Historic Wood	<input type="checkbox"/> Human remains			
<input type="checkbox"/> 70						
Diagnostics (indicate quantity of cultural/temporal/functional types as counts, estimates, or "P")						
<input type="checkbox"/> 1	45-70 caliber rifle shell cartridge, ca. AD 1873-1892					
Assemblage Remarks: With the exception of the previously described .45-70 caliber rifle shell cartridge, it seems reasonable to classify ORPI 2019 B, Site 5 as a precontact Native American lithic procurement and processing site of indeterminate age.						
Feature Data: (Complete one feature record for each type of feature recorded for this site.)						
Feature No. 1	Name	Count	Use	Culture	Age	Period/Phase
Feature 1 Remark:						
Feature No. 2	Name	Count	Use	Culture	Age	Period/Phase
Feature 2 Remarks:						
ASM Site Card Rev. 12/3/93						

Appendix I, Figure 5b. ASM Site Card for ORPI 2019 B, Site 5, pp. 2 of 2.